
REPORT
OF THE
HEALTH OFFICER
TO THE
COMMISSIONERS OF THE DISTRICT OF COLUMBIA
FOR THE
YEAR ENDED JUNE 30, 1895.

OFFICERS OF THE HEALTH DEPARTMENT TO JUNE 30, 1895.

HEALTH OFFICER.

WM. C. WOODWARD, M. D.

CHIEF CLERK AND DEPUTY HEALTH OFFICER.

HARRY C. MCLEAN.

CLERKS.

C. G. SANDERS.
W. B. MOORE.
W. C. FOWLER.

T. W. PARSONS.
EMMETT WOODWARD.
S. A. RANSOM.

SANITARY INSPECTORS.

T. M. SHEPHERD.
C. H. WELCH.
O. T. BEAUMONT.
J. H. CRAWFORD.

E. W. WHITAKER.
G. A. HOWE.
J. D. HIRD.

FOOD INSPECTORS.

J. R. MOTHERSHEAD.

THOS. CAVANAUGH.

W. H. H. HOOVER.

INSPECTOR OF MARINE PRODUCTS.

GWYNN HARRIS.

POUNDMASTER.

SAMUEL EINSTEIN.

MESSENGERS.

ORLANDO KING.

ISAAC PINKNEY.

SCARLET FEVER AND DIPHTHERIA SERVICE.

AUSTIN O'MALLEY, medical inspector.

G. T. RICHARDSON, driver and assistant.

PHYSICIANS TO THE POOR.

ALLEN WALKER.
C. W. BIRDSALL.
H. P. P. THOMPSON.
C. V. PETTEYS.
J. A. DRAWBAUGH.
S. L. HANNON.
J. F. PRICE.
J. C. MEREDITH.
J. A. MUDD.
M. A. CUSTIS.

CHAS. M. EMMONS.
H. S. GOODALL.
J. W. SHAW.
H. C. RUSSELL.
J. D. BRADFELD.
C. W. CHILDS.
R. D. BOSS.
J. T. COLE.
J. A. WATSON.
IRA W. DENNISON.

REPORT OF THE HEALTH OFFICER.

WASHINGTON, D. C., June 30, 1895.

GENTLEMEN: I have the honor to submit the following statement of the work of the health department during the fiscal year ended June 30, 1895, this being the twenty-fourth annual report of the department and the seventeenth since the date of its present organization. The year was marked by the resignation of Health Officer Charles M. Hammett, which took effect August 1, 1894, and by the appointment of the present incumbent to succeed him.

Two employees lost their lives during the year from diseases contracted in the performance of official duty, Dr. C. J. Osmun, medical sanitary inspector, dying August 14, 1894, of diphtheria and Mrs. Margaret Pemberton, a nurse in the smallpox hospital, November 17, 1894, of smallpox.

The office was moved February 15, 1895, from 503 D street NW., where it had been since July 1, 1883, to 464 Louisiana avenue.

The total number of deaths occurring in the District of Columbia during the year specified was 5,565, of which 3,114 were white and 2,451 colored. The death rate per annum was therefore 16.97 per 1,000 white inhabitants, 28.18 per 1,000 colored inhabitants, and 20.57 per 1,000 of the entire population.

The number of deaths is shown by classes in Table A, while similar information as to the preceding year is given in Table B, for purposes of comparison.

TABLE A.—Showing deaths by classes, arranged by sex and color, with percentages and annual death rates, for year ended June 30, 1895.

Cause of death.	Deaths.							Percentages to total deaths.				Annual death rate.		
	White.		Colored.		White.	Colored.	Total.	White.		Colored.		White.	Colored.	Total.
	M.	F.	M.	F.				M.	F.	M.	F.			
Zymotic.....	304	277	220	235	581	455	1,036	17.73	19.81	18.52	18.60	3.16	5.23	3.83
Constitutional.....	305	298	277	292	603	569	1,172	17.78	21.29	23.32	23.11	3.29	6.54	4.33
Local.....	865	629	545	578	1,494	1,123	2,617	50.43	44.97	45.87	45.76	8.14	12.91	9.68
Developmental.....	120	153	95	126	273	221	494	7	10.93	8	10	1.49	2.54	1.83
Violence.....	121	42	51	32	163	83	246	7.06	3	4.29	2.53	.89	.96	.90
Total.....	1,715	1,399	1,188	1,263	3,114	2,451	5,565	100	100	100	100	16.97	28.18	20.57

TABLE B.—*Showing deaths by classes, arranged by sex and color, with percentages and annual death rates, for the year ended June 30, 1894.*

Cause of death.	Deaths.						Percentages to total deaths.				Annual death rate.		
	White.		Colored.		White.	Colored.	White.		Colored.		White.	Colored.	Total.
	M.	F.	M.	F.			M.	F.	M.	F.			
Zymotic	419	364	298	317	783	615	23.1	24	22	23.4	4.27	7.07	5.17
Constitutional	313	284	280	301	597	587	17.3	18.8	21.1	22.2	3.25	6.74	4.37
Local	848	665	584	549	1,513	1,133	46.7	43.9	43.2	40.3	8.24	13.05	9.78
Developmental	124	145	119	156	209	275	6.9	9.6	8.9	11.5	1.47	3.15	2.01
Violence	111	56	65	35	157	100	6	3.7	4.8	2.6	.91	1.14	.99
Total	1,815	1,514	1,352	1,358	3,329	2,710	6.039	100	100	100	18.14	31.15	22.32

VITAL STATISTICS.

There were 5,565 deaths from all causes during the year. For the previous year they numbered 6,039. The decrease, 474, is distributed as follows: Zymotic diseases, 362; constitutional diseases, 12; local diseases, 29; developmental diseases, 52; and from violence, 19. An examination of the decrease according to the ages of the decedents shows that the deaths during the first five years of life numbered 457 less during the year 1894-95 than during the year 1893-94, while the difference for all other ages was but 17.

Zymotic diseases.—The deaths from zymotic diseases numbered 1,036 as against 1,398 in the preceding year. Of these 581 were white, with an annual death rate of 31.70, and 455 colored, with a rate of 5.23 per 1,000. The principal causes of mortality were diarrheal diseases (300), typhoid fever (187), diphtheria (124), epidemic influenza (87), and whooping cough (58). The fact of 87 deaths occurring from epidemic influenza illustrates how an infectious disease may, when once imported, become a permanent factor in the death rate, since this is the sixth year's presence of this disease. During the entire period it seems to have presented the same form of attack and in most cases reached a fatal result through sequelæ, chiefly involving the lungs, brain, or kidneys.

Of the total number of deaths from zymotic diseases, 906 were classed as miasmatic, amounting to 16.3 per cent of the total mortality from all causes. The white population suffered to the extent of 2.85 and the colored 4.40 per 1,000.

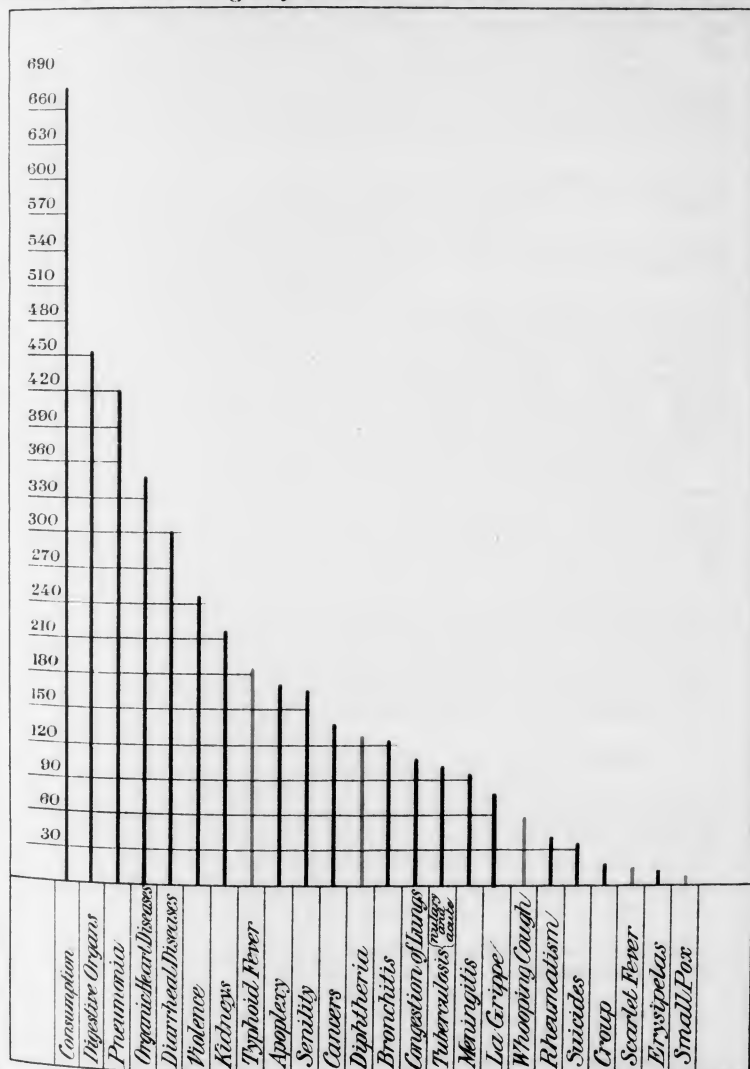
Constitutional diseases.—The deaths from this class of diseases amounted to 1,172 as compared with 1,184 last year. In this class are embraced cancers causing 140 deaths, and pulmonary tuberculosis causing 777. Of the cancerous patients 112 were white (death rate 0.61 per 1,000) and 28 colored (death rate 0.32 per 1,000), the principal organs attacked being, in order of frequency, the uterus, stomach, and breast.

The deaths from tubercular disease of the lungs numbered 13.9 per cent of the mortality for the year, with a death rate of 1.77 per 1,000 white and 3.98 per 1,000 colored.

Local diseases.—The class embraces diseases of the nerves, heart, lungs, digestive system, kidneys, lesions of the osseous and locomotory systems and of the integuments, not included in other classes. In all they caused 2,617 deaths, 47 per cent of the total mortality.

From diseases of the nervous system there were 730 deaths, equal to 13 per cent of all. Of these 169 were from cerebral hemorrhage, 125 were from convulsions (mostly infantile), 91 from meningitis, and 33 from

Chart VIII. Diagram showing Mortality from some of the principal causes of death during the year ended June 30, 1895. District of Columbia.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

————— Indicates deaths from Contagious Diseases.
 ————— " " " Ordinary Diseases.
 ————— " " " Influenza.



sunstroke. From comparison with the several recent reports it does not appear that disorders of the brain are materially on the increase.

The same remark may also be made in relation to maladies of the heart. There were 373 deaths from these as compared with 368 in the last report. They compose 6.70 per cent of all the mortality. The greatest number, somewhat over 200, was from valvular diseases.

There were 770 deaths due to diseases of the respiratory organs (not including tuberculosis), comprising 13.85 per cent of the total mortality. Of these 650 were from acute lung diseases, 413 of these being due to pneumonia.

The diseases of the digestive system, including disorders of the liver and stomach, caused 452 deaths, equal to 8 per cent of all. Thirteen resulted from appendicitis (11 white and 2 colored.)

From the affections of the genito-urinary system there was a mortality of 236, 4.23 per cent of the total mortality. The annual totals from this order vary but little from year to year.

Developmental diseases.—This class, embracing diseases peculiar to infants, women, and the aged, claimed 492 victims, or nearly 9 per cent of all deaths. Of the infants, 109 were prematurely born, and the others died from various casualties incident to birth. There were 7 cases of umbilical hemorrhage and 8 of open foramen ovale. There were 55 deaths of women from diseases attending and following childbirth, including 11 from puerperal septicæmia and the same number from peritonitis, about equally divided between white and colored.

Infant mortality.—There were 1,775 deaths of children under 5 years of age (31.87 per cent of the total mortality), of whom 1,257 were less than 1 year old (22.5 per cent of the total mortality); 830 were white and 945 colored. The percentage of the mortality of the white to the mortality from all causes was 14.91 and that of the colored 16.8. Of the causes of death the principal were cholera infantum, enterocolitis, dentition, and those embraced in the terms "marasmus" and "inanition."

Violence.—There were 248 violent deaths reported. Of these 207 were by accidents, 7 homicides, and 34 suicides. Of the accidental deaths 10 were caused by steam railroads and 8 by street cars. There were 14 deaths from inhaling illuminating gas, 30 by drowning, 36 by falls, and 32 by burns and scalds.

Of the 34 suicides 10 were by gunshot, 9 by narcotic poison, 5 by corrosive poison, and 5 by inhaling illuminating gas.

Births.—There were 4,794 returns of births made during the year, of which 2,878 were white and 1,916 colored. Of the total births reported 624 were illegitimate, 104 being white and 520 colored. Compared with the year 1893-94, 27 more illegitimate births were reported among the whites and 19 less among the colored. The births, as reported, fell short of the deaths by 771. They amounted to 86.1 per cent of the total mortality.

There were 546 births in hospitals, 282 of which were in Columbia, 178 in Freedmen's, 26 in Garfield, and 33 in the Homeopathic. Of those born in hospitals 151 were white and 395 colored.

Estimated from the increase in the population, a large number of births (probably 5,000) were not reported as required by law.

Stillbirths.—There were 540 stillbirths reported during the year, 201 of which were white and 339 colored. Over one-half occurred in the eighth and ninth months of gestation, and there were 7 reported as having gone to the tenth month. Of the whole number 432 were attended by physicians and 108 were investigated and reported by the coroner. These latter were almost wholly the dead waifs found by the police in sewers, and near sewer traps, and in side alleys and unfrequented places.

Of necessity they are cared for and buried at the public expense. An inspection of Table XIV (see appendix) of this report will give the cause of the stillbirths in detail. There were 12 abnormal presentations, 12 attributable to ill health of mother, and 29 to overexertion of mother, 21 of which were colored, the mothers of whom were washerwomen or engaged in work requiring heavy lifting.

Marriages.—The marriages reported to this department were 2,391, as against 1,496 last year. Of these 1,411 were white and 980 colored. This large increase is partly due to the sudden and rigid application of what is known as the Edmunds law. There were, however, 3,630 marriage licenses issued by the clerk of the court during the year, showing approximately 1,239 failures on the part of those officiating at marriages to make the return to this department as required by law.

VITAL STATISTICS FOR TWENTY YEARS.

To show the variations in the death rates during the past twenty years, Table C is inserted.

TABLE C.—Showing population, deaths, and death rates for the twenty years ended June 30, 1895.

Year.	Population.			Deaths.			Death rates.		
	White.	Colored.	Total.	White.	Colored.	Total.	White.	Colored.	Total.
1876	106,741	50,859	157,600	2,086	5,074	4,160	19.54	40.78	26.40
1877	109,505	52,870	162,375	2,187	5,021	4,208	19.97	38.22	25.91
1878	112,340	54,960	167,300	2,166	2,065	4,231	19.28	37.57	25.29
1879	115,247	57,130	172,377	2,196	2,113	4,309	19.05	36.90	24.99
1880	118,236	59,402	177,638	2,085	2,121	4,206	17.63	35.71	23.68
1881	121,300	61,760	183,060	2,205	1,931	4,136	18.18	31.27	22.59
1882	124,441	64,212	188,653	2,353	2,818	4,571	18.91	34.54	24.23
1883	126,300	65,680	191,980	2,270	2,016	4,286	17.97	30.69	22.33
1884	130,700	69,300	200,000	2,576	2,238	4,814	19.71	32.29	24.07
1885	130,700	69,300	200,000	2,610	2,388	4,998	19.97	34.45	24.99
1886	136,000	69,300	205,000	2,442	2,232	4,674	17.96	32.35	22.80
1887	140,000	70,000	210,000	2,484	2,181	4,665	17.74	31.15	22.21
1888	150,000	75,000	225,000	2,778	2,262	5,040	18.52	20.16	22.40
1889	170,000	80,000	250,000	2,713	8,439	5,152	15.96	30.49	20.60
1890	170,000	80,000	250,000	2,934	2,630	5,564	17.25	32.87	22.25
1891	170,000	80,000	250,000	3,106	2,614	5,720	18.27	32.68	22.88
1892	175,000	85,000	260,000	3,442	2,656	6,098	19.67	31.19	23.44
1893	195,000	90,000	285,000	3,677	2,775	6,452	18.83	30.80	22.64
1894	195,000	90,000	285,000	3,329	2,710	6,039	17.07	30.10	21.16
1895	183,516	86,998	270,514	3,114	2,451	5,565	16.97	28.18	20.57
Mean death rates.							18.54	32.89	23.28

While for the year 1894-95 they are based upon the population as ascertained by the police census taken in December, 1894, those for several years immediately preceding have been calculated upon an estimated population, which subsequent enumerations by the police have shown to be too large. For instance, the population for the fiscal year 1892-93 was assumed to be 285,000, while the census in December, 1894, showed that it was, even at that time, but 270,514. Honesty and accuracy, therefore, required that some revision of these estimates be made, although the result would be an apparent increase in the general death rate and a change in the relation of the death rates of the white and colored elements of the population. The following table has therefore been made to show the estimated population and death rates as revised, so as to conform with the figures furnished by census returns:

TABLE C (REVISED).—*Showing population, deaths, and death rates for the twenty years ended June 30, 1895, based upon results of police censuses.*

Years	Population.			Deaths.			Death rates.		
	White.	Colored.	Total.	White.	Colored.	Total.	White.	Colored.	Total.
1876.....	106,741	50,859	157,600	2,086	2,074	4,160	19.54	40.78	26.40
1877.....	109,505	52,870	162,375	2,187	2,021	4,208	19.97	38.22	25.91
1878.....	112,340	54,960	167,300	2,166	2,065	4,231	19.28	37.57	25.29
1879.....	115,247	57,130	172,377	2,196	2,113	4,309	19.05	36.90	24.99
1880.....	118,236	59,402	177,638	2,085	2,121	4,206	17.63	35.71	23.68
1881.....	121,300	61,760	183,060	2,205	1,931	4,136	18.18	31.27	22.59
1882.....	124,441	64,212	188,653	2,353	2,218	4,571	18.91	34.54	24.23
1883.....	126,300	65,680	191,980	2,270	2,016	4,286	17.97	30.69	22.33
1884.....	131,820	64,670	196,490	2,576	2,238	4,814	19.54	34.61	24.50
1885.....	134,770	66,340	201,110	2,610	2,388	4,998	18.37	35.97	24.85
1886.....	137,790	68,050	205,840	2,442	2,232	4,674	17.72	32.80	22.71
1887.....	140,880	69,800	210,680	2,484	2,181	4,665	17.63	31.25	22.14
1888.....	144,030	71,600	215,630	2,778	2,262	5,040	19.29	31.59	23.37
1889.....	148,870	73,960	222,830	2,713	2,439	5,152	18.22	32.93	23.12
1890.....	155,550	76,910	232,460	2,934	2,630	5,564	18.86	34.20	23.94
1891.....	162,540	79,980	242,520	3,106	2,614	5,720	19.11	32.68	23.59
1892.....	169,840	83,170	253,010	3,442	2,656	6,098	20.27	31.93	24.10
1893.....	175,550	85,250	260,800	3,677	2,775	6,452	20.95	32.55	24.74
1894.....	179,485	86,115	265,600	3,329	2,710	6,039	18.55	31.47	22.73
1895.....	183,516	86,998	270,514	3,114	2,451	5,565	16.97	28.18	20.57
Totals and means.	2,798,751	1,379,716	4,178,467	52,753	46,135	98,888	18.84	33.44	23.67

It is gratifying to note that at no previous time during the entire period for which definite information can be obtained, twenty years, were the death rates so low, either for the whole population or for the white or the colored elements of it, as they were during the year just ended. Especially gratifying is the decrease of the death-rate for the colored population (from 40.78 per 1,000 to 28.18). It is a matter of regret, however, that it remains even this high and is so potent a factor in maintaining a high general death rate for the District.

Not only has the death rate fallen, but, as shown in the following table (Table D), there has been during the past fifteen years a gradual increase in the average age at death.

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TABLE D.—Deaths and average ages in the District of Columbia for fifteen years, from 1881 to 1895, inclusive.

Years.	WHITE.											
	All ages.			5 years and over.			20 years and over.			40 years and over.		
	Total deaths.	Years.	Months.	Days.	Total deaths.	Years.	Months.	Days.	Total deaths.	Years.	Months.	Days.
1881.....	2,205	32	...	3	1,507	46	6	...	1,320	51	2	14
1882.....	2,353	32	1	13	1,585	45	7	5	1,381	51	6	14
1883.....	2,270	32	8	13	1,548	45	9	2	1,332	51	8	14
1884.....	2,636	31	...	9	1,686	45	10	...	1,492	52	3	15
1885.....	2,610	32	3	14	1,789	46	2	17	1,546	51	3	17
1886.....	2,442	34	6	19	1,752	46	10	22	1,543	51	8	22
1887.....	2,484	34	1	17	1,740	47	7	15	1,542	52	3	6
1888.....	2,778	33	2	28	1,876	48	...	28	1,666	52	10	12
1889.....	2,713	32	8	6	1,814	47	11	2	1,606	52	6	5
1890.....	2,934	33	8	...	2,038	47	3	9	1,819	51	11	29
1891.....	3,106	34	7	25	2,212	48	4	11	1,989	52	8	5
1892.....	3,442	34	6	7	2,436	48	2	16	2,165	52	10	1
1893.....	3,677	34	1	19	2,590	49	2	9	2,345	52	10	2
1894.....	3,329	35	9	26	2,330	50	...	7	2,075	51	10	17
1895.....	3,114	36	9	22	2,295	49	10	16	2,060	53	9	1
Total and average, 15 years.	42,093	33	7	6	29,198	47	6	12	25,881	52	2	12
Average...	2,806+	...	...	...	1,946	...	...	...	1,726	...	...	...

COLORED.															
1881.....	1,931	20	10	11	949	41	9	13	795	47	8	10	541	63	10
1882.....	2,218	21	5	20	1,113	41	...	8	892	48	10	7	527	61	10
1883.....	2,016	21	9	20	1,044	40	9	23	819	48	10	7	496	61	16
1884.....	2,229	21	3	19	1,094	42	4	10	838	48	6	16	503	61	2
1885.....	2,388	22	7	20	1,249	40	6	18	986	50	...	23	618	62	1
1886.....	2,232	22	11	17	1,226	41	4	4	974	47	6	20	594	62	14
1887.....	2,181	22	...	7	1,134	41	3	22	885	49	4	16	554	60	23
1888.....	2,262	22	11	3	1,222	41	9	22	987	48	8	2	604	60	8
1889.....	2,439	21	11	24	1,249	40	11	8	984	47	6	13	562	60	3
1890.....	2,630	22	10	6	1,458	40	1	20	1,126	47	3	2	693	59	5
1891.....	2,614	22	9	29	1,442	40	6	17	1,166	47	6	1	720	58	11
1892.....	2,656	23	4	23	1,477	40	9	2	1,190	48	...	28	739	58	6
1893.....	2,775	23	8	18	1,503	41	3	5	1,204	48	4	28	754	60	3
1894.....	2,710	22	11	9	1,487	39	9	16	1,179	46	10	16	714	59	2
1895.....	2,451	25	8	27	1,505	41	5	3	1,177	47	10	15	771	59	7
Total and average, 15 years.	35,732	22	7	4	19,152	41	...	20	15,202	48	2	16	9,410	60	7
Average...	2,382	...	...	...	1,277	...	...	...	1,013	...	...	...	627	...	...

Average age of whites, 33 $\frac{1}{2}$ years.
Average age of colored, 22 $\frac{1}{2}$ years.

Among the white population, taken as a whole, the duration of life was in 1881 thirty-two years and three days, and in 1895 thirty-six years, nine months, and twenty-two days, an increase of four years, nine months, and nineteen days. Further examination shows that this increase has not been confined to any one age period, but has been generally distributed.

The average age of colored decedents has risen from twenty years, ten months, and eleven days in 1881 to twenty-five years, eight months, and twenty-seven days in 1895, an increase of four years, ten months, and sixteen days, due chiefly to a lessened infant mortality.

The average age of all colored decedents during the fifteen years was twenty-two years, seven months, and four days. That of all white decedents was, during the same period, thirty-three years, seven months, and six days. The relatively brief duration of life and high death rate among the colored population merit the earnest consideration of those

interested in their welfare. A careful investigation of the relative frequency during the past twenty years of deaths from zymotic diseases among the two races gives the following results: Consumption, diarrheal diseases, and whooping cough have at all times during that period been a much more frequent cause of death among those of African descent than among the whites. The same is true of typhoid fever, excepting during the year 1883-84, when its death rate was slightly lower for the colored. The death rates of the two races for measles and diphtheria have no constant relation. That for scarlet fever was, with the exception of 1892, uniformly lower for the colored than for the white.

POPULATION.

The population and average annual increase since 1887 is shown in the following table:

TABLE E.—Statement showing the population of the District of Columbia, white and colored, and average per cent of increase per annum since 1887.

Year.	White.	Increase.	Annual average.	Colored.	Increase.	Annual average.	Total population.	Increase.	Annual average.
			<i>Per cent.</i>			<i>Per cent.</i>			<i>Per cent.</i>
1887	145,635			72,522			218,157		
1892	173,610	27,975	4.49	84,841	12,319	3.99	258,451	40,294	4.33
1894	183,516	9,906	2.24	86,998	2,157	1.01	270,514	12,063	1.84

SCARLET FEVER AND DIPHTHERIA SERVICE.

The details of the work in this service will be found in the appendix in the report of the medical sanitary inspector, Dr. Austin O'Malley.

There were reported among the whites 295 cases of diphtheria, 91 of which were fatal, and among the colored 117 cases, 33 of which were fatal, or a total of 412 cases, with 124 deaths. The following table shows the relative frequency of the disease among the white and the colored races during the last two years:

TABLE F.—Reported cases of diphtheria.

Year.	Ratio per 10,000 of population.			Percentage of fatal cases.		
	White.	Colored.	Total.	White.	Colored.	Total.
1893-94	14.06	20	15.97	43.41	34.48	39.81
1894-95	15.72	13.31	14.95	30.84	28.20	30.09

No localized outbreaks of diphtheria occurred during the year.

Improved methods of diagnosis have led to an altered conception of the clinical symptoms of diphtheria. Many cases which would have formerly been classed under that heading are now rejected on account of the absence of the Klebs-Loeffler bacillus from the air passages, as determined by bacteriological tests.

On the other hand, many cases which formerly would have been regarded as simple sore throat are now shown by similar tests to be diphtheria. Cases of the latter class may give origin to severe and even fatal cases of diphtheria, with well-marked clinical symptoms. Their proper diagnosis is therefore of the utmost importance, but can only be made by a bacteriological examination. Similarly, the differentiation of true diphtheria from similar throat affections which are comparatively harmless is of importance, so as to prevent hardship by causing unnecessary quarantine.

Bacteriological examinations are necessary also to determine positively when a case of diphtheria ceases to be infectious. Their cost was such, however, as to greatly limit their use under ordinary circumstances. But it was so important that they should be made that the faculty of the medical department of Georgetown University, in order to enable physicians generally to employ this method of diagnosis, arranged to make such examinations free. During the past year the health department relieved the medical school of such work, continuing, however, to use the bacteriological laboratory belonging to that institution. More recently arrangements have been made whereby a similar laboratory will be equipped in connection with this department.

This improved method of diagnosis renders impracticable any accurate comparison of the annual number of cases of diphtheria occurring during the past years and of the average period of quarantine, as it is evident that many cases formerly reported as diphtheria were not really such, and that many cases of diphtheria were classed as other diseases, notably so called membranous croup, of which 80 cases in every 100 examined proved to be diphtheria. Similarly, the death rate is necessarily affected by such changes, many mild cases of diphtheria now being reported as the result of bacteriological examinations, and fewer of the severe ones being erroneously diagnosed as membranous croup or quinsy. In the tables and percentages given in the report of the medical sanitary inspector allowance has been made for variations such as those cited above.

Through the kindness of Dr. Walter Wyman, Supervising Surgeon-General Marine-Hospital Service, and P. A. Surg. J. J. Kinyoun, of the same Service, this department has been able to furnish free antidiphtheritic serum for use in cases where the patients were too poor to pay the present exorbitant prices for it. From the use of this remedy, combined with proper and prompt diagnosis and improved methods of disinfection, there is every reason to expect a marked diminution of the cases of diphtheria and a decrease in the mortality therefrom.

During the past year there were reported among the whites 382 cases of scarlet fever, 14 of which were fatal, and among the colored 45 cases of scarlet fever, 2 of which were fatal, or a total of 427 cases and 16 deaths. The following table shows the relative frequency of the disease among the two races during the past two years:

TABLE G.—*Reported cases of scarlet fever.*

Year.	Ratio per 10,000 of population.			Percentage of fatal cases.		
	White.	Colored.	Total.	White.	Colored.	Total.
1893-94.....	12. 20	1. 72	8. 83	6. 25	.....	5. 85
1894-95.....	20. 36	5. 12	15. 50	3. 66	4. 44	3. 74

The disease has, as a rule, been of a mild type. Several outbreaks of the disease occurred in schools, making it necessary to close the school and disinfect the schoolroom, and probably originated from mild, undiagnosed cases, where the patient had been allowed, in ignorance of the true nature of the disease, to continue at his school duties. It is greatly to be regretted that there is no way of diagnosing such cases with certainty, but if parents would treat them as suspicious and resort to isolation and disinfection they would cause no trouble, even in the absence of a positive diagnosis.

The disease is undoubtedly occasionally spread by the overconfidence of the physician in the honesty of the patient and in his ability to determine when desquamation has ceased. In some instances investigation of cases reported as free from danger of spreading the disease revealed the patient still desquamating but running about the street with his playmates. The usual history was that with the disappearance of subjective symptoms the physician has ceased attendance, instructing the parents to let him know when the skin has ceased to desquamate. He had not seen the patient for ten days or two weeks prior to reporting the recovery and had been misinformed through the ignorance or dishonesty of the parents.

As has been the case every year since it has been necessary to report cases of scarlet fever to the health department, a much greater number has been reported among the whites than among the colored. The death rate from the disease has been uniformly higher among the whites than among the colored during the past twenty years. I can not agree with the medical sanitary inspector in regarding the difference as due to difficulty in recognizing scarlet fever in the darker-skinned race, and am of the opinion that its most frequent victims are among the whites.

MUNICIPAL DISINFECTING SERVICE.

The amount appropriated for the establishment of a municipal disinfecting service, which became available March 2, 1895, is much less than the estimated cost of such service and is not sufficient for the purpose. Arrangements are now being made for the installation of a disinfecting plant. It is hoped that a further appropriation will be secured for the other items of equipment and labor necessary for the organization of a complete disinfecting service.

At present the disinfection of rooms infected by any disease except smallpox is necessarily left to the householder, who is without the technical knowledge or skill necessary for the proper performance of the work. It is proposed, if the requisite appropriation be secured, that all disinfection be done by a corps of men trained for such work, and under the supervision of the health department.

ISOLATION HOSPITAL.

Provision should be made for the speedy erection and equipment of a hospital for the reception of patients suffering from minor contagious diseases, viz, diphtheria, scarlet fever, and measles. Twice appropriations have been made for this purpose but without effect, the building erected with the first appropriation being now used (without authority of law) for a nurses' home, and the use of the second appropriation having been prevented by subsequent legislation.

In the sundry civil bill, approved August 30, 1890, an appropriation for the Freedmen's Hospital was made, as follows:

For erecting one frame building of four rooms, to provide for a class of patients not provided for in other institutions, to wit, those suffering with contagious diseases, such as measles, scarlet fever, diphtheria, and erysipelas, two thousand five hundred dollars.

The building was erected and used in accordance with the terms of the appropriation, and, so far as can be discovered, in no instance did contagion spread to other parts of the institution. In the reorganization of the hospital which began in February, 1894, it was found desirable to provide accommodations for certain nurses, pupils, and others connected with the training school about to be organized, and the ward provided by Congress for the reception of cases of contagious diseases was used for that purpose.

On March 17, 1895, a 7-year-old child suffering from diphtheria was carried by her mother through the streets for miles, on foot and in the cars, seeking shelter. Both mother and child had been turned out of their usual lodging places upon the discovery of the nature of the disease from which the child was suffering. Temporary shelter was at last secured at the first precinct police station and a few hours later both mother and child were sent to the Washington Asylum Hospital where, through the kindness of the physician in charge, Dr. J. W. Bovee, they were cared for.

A short time after this a case of scarlet fever occurred in the home of a prominent citizen, the patient being the child of a servant who slept in the house. The only room at the Washington Asylum Hospital being occupied by the patient suffering from diphtheria, this department requested Dr. D. H. Williams, surgeon in charge of Freedmen's Hospital, to admit this patient to the ward provided at that institution for such cases. Upon his declining to do so the following letter was forwarded to the Secretary of the Interior:

WASHINGTON, D. C., March 20, 1895.

SIR: The Commissioners of the District of Columbia are continuously embarrassed by the absence of accommodations for patients afflicted with contagious diseases other than smallpox. The sundry civil appropriation act of August 30, 1890, under the head of "Freedmen's Hospital and Asylum" (U. S. Stats., vol. 26, p. 393), contains the following provision:

"For erecting one frame building of four rooms, to provide for a class of patients not provided for in other institutions, to wit, those suffering with contagious diseases, such as measles, scarlet fever, diphtheria, and erysipelas, two thousand five hundred dollars."

The Commissioners have ascertained that a building was erected with this money and for some time thereafter used as a contagious diseases ward, but is now occupied as a lodging house for nurses in the training school for nurses attached to Freedmen's Hospital, and its use for the accommodation and treatment of contagious cases entirely discontinued. As it is the only ward especially provided by law in any hospital in the District for the treatment of contagious diseases referred to, its employment for the purpose intended is absolutely necessary in the interest of humanity.

The Commissioners have hesitated to call the matter to the attention of the surgeon in charge of the hospital otherwise than informally, in view of a doubt as to the official relationship they sustain to him under the provision in the District appropriation act of March 3, 1893, that "hereafter the expenditures for the Freedmen's Hospital and Asylum shall be under the supervision and control of the Commissioners of the District of Columbia;" and in consideration of the difficulty of distinguishing between the control of expenditures and the control of matters of administration have taken the liberty to place the situation before you, in the hope that the building may be speedily restored to the use for which it was provided.

Very respectfully,

(Signed)

GEORGE TRUESDELL,

Acting President Board of Commissioners of the District of Columbia.

HON. HOKE SMITH,

Secretary of the Interior.

The following reply was received:

WASHINGTON, March 28, 1895.

SIR: Your communication of recent date, calling my attention to the fact that the Commissioners of the District of Columbia are continuously embarrassed by the absence of accommodations for patients afflicted with contagious diseases other than smallpox has been considered by me.

In said communication you call my attention to the fact that the sundry civil appropriation act of August 30, 1890, under the head of Freedmen's Hospital and Asylum (26 Stats., p. 393), contains the following provision:

"For erecting one frame building of four rooms, to provide for a class of patients not provided for in other institutions, to wit, those suffering with contagious diseases, such as measles, scarlet fever, diphtheria, and erysipelas, two thousand five hundred dollars."

It appears that in accordance with the provisions of said act, a building was erected within something less than 25 feet of the surgical and obstetrical wards of the Freedmen's Hospital, and is now being used as a nurses' home, there being no other building available to that purpose.

I am requested by the Board of Commissioners to give direction that said building be immediately devoted to the use for which it was provided, inasmuch as it is the only building especially provided by law for the treatment of such contagious diseases as are mentioned in the appropriation act hereinbefore mentioned.

Dr. D. H. Williams, surgeon in chief of the Freedmen's Hospital, and Rev. Dr. J. E. Rankin, president of Howard University, whose attention has been called to the subject-matter of your communication, have entered a protest against the use of said building for the purpose mentioned therein.

It is represented by the surgeon in chief that the patients occupying the surgical and obstetrical wards of the Freedmen's Hospital, which are in close proximity to the building to which your communication refers, would be in great danger, more especially since that class of patients are peculiarly susceptible to such contagious diseases as are enumerated in said appropriation act.

It is represented also by Dr. Rankin that the grounds and buildings now occupied by the Freedmen's Hospital and Asylum are the property of Howard University, and were leased to the Commissioners of the District of Columbia to be used for the ordinary purposes of such an institution, and that the contract by which said property passed into the possession of the Commissioners of the District of Columbia does not contemplate, either by express provision or by implication, that any of said buildings should be used for the purpose of receiving patients afflicted with contagious diseases other than such as are developed among the patients under treatment in the Freedmen's Hospital. Dr. Rankin contends further that the erection of the building made in pursuance of the provision contained in the appropriation act of 1890 was done without the consent of the trustees of Howard University, and that said trustees have never signified their willingness that any building located upon the grounds occupied by the Freedmen's Hospital should be used for the treatment of patients afflicted with contagious diseases.

I recognize and appreciate the fact that in the interest of humanity some provision should be made for giving proper attention to cases of contagious diseases within the District of Columbia, but I am also confronted with the fact that there is a question of humanity involved in the interest of the patients who may from time to time be under treatment in the surgical ward of the Freedmen's Hospital. It is contended with some plausibility, by physicians who entertain similar views to those of the honorable Board of Commissioners, that by the use of the building in question for the reception of such patients as is contemplated by the appropriation act of 1890, if proper precautions were observed and exercised, there would be no danger of communicating the contagion to the patients occupying the surgical ward of the Freedmen's Hospital. Not being a physician myself, I am not prepared to settle this controversy, having every confidence in the sincerity of the views taken by the honorable Board of Commissioners, as well as those taken by the surgeon in chief of the Freedmen's Hospital.

You doubtless appreciate the fact that I entertain a feeling of great reluctance in giving direction that the building in question should be devoted to a purpose which in the judgment of the surgeon in chief would endanger the health and lives of patients occupying buildings in such close proximity. This reluctance is strengthened by the fact that learned physicians of the District of Columbia with whom I have conferred concur in the views of the surgeon in chief.

The Freedmen's Hospital is recognized by the Government as being peculiarly adapted to the advancement of the colored race, and I can not consent that its facilities should be lessened by devoting it to the purpose of a contagious hospital.

Regretting the embarrassing conditions which suggested your communication, I am, very respectfully,

(Signed)

HOKE SMITH,
Secretary.

Hon. GEORGE TRUEDELL,
Acting President Board of Commissioners
of the District of Columbia.

And thus came to naught that part of the act of Congress of August 30, 1890, which sought to provide for this District—

One frame building of four rooms, to provide for a class of patients not provided for in other institutions, to wit, those suffering from contagious diseases, such as measles, scarlet fever, diphtheria, and erysipelas.

But since the date of the act referred to above another appropriation has been made, March 3, 1893, as follows:

For the erection, by the Commissioners of the District of Columbia, on land belonging to the United States or the District of Columbia, to be selected by said Commissioners, of a hospital for the treatment of persons suffering from contagious and infectious diseases, five thousand dollars; and in case a suitable site can not be

secured upon United States or District lands, an additional sum for the purchase of a site for said hospital of not exceeding ten thousand dollars; in all, fifteen thousand dollars.

And in addition to the amount so appropriated the Daisy Chain Guild, an organization of children, had raised quite a sum to be devoted to the same purpose.

Repeated efforts were made to secure a suitable site until in June, 1894, when lots 6, 7, 22, and 23, block 3, Mount Pleasant subdivision, were purchased for the purpose, the entire cost being \$9,074.50. These lots contained 30,000 square feet, and were situated between Bismarck and Princeton, Seventh and Sherman streets. The purchase was made privately. When it became known to the public interested persons stirred up those living or owning property within a half a mile of the site to vigorous protests based upon the false assumption that such a hospital as it was proposed to establish was a source of danger to the neighborhood. The opposition culminated in the following law, which was inserted in the appropriation bill of March 2, 1895, as an amendment to the clause making appropriation for a new smallpox hospital:

That hereafter no other building for use as a public or private hospital for contagious diseases shall be erected in the District of Columbia within 300 feet of any building owned by a private individual or any other party than the one erecting the building.

The site already purchased could not be used on account of this law. There was no money available for the purchase of a new site. And thus was thwarted the second effort of Congress to provide accommodations for the treatment of minor contagious diseases.

Providence Hospital generously offered in the emergency to receive cases of measles, scarlet fever, and diphtheria, but it is now necessary to begin again the effort to secure a special hospital for that purpose, not for the care of the sick so much as for the protection of the well. Such a hospital is a sanitary institution for the accommodation of the rich as well as the poor. To give it the appearance of a charitable establishment, by locating it on the same reservation with the poorhouse, workhouse, and jail, will interfere with the use for which it is intended. While this department has not had occasion since the accession of the present health officer to the office to consider the relative advantages of different sites, it is, for the reason given above, opposed to the location of an isolation hospital on Reservation 13.

The distance of the hospital from adjacent buildings, as fixed by law, 300 feet, is unnecessarily great, but if an appropriation be granted large enough to secure the necessary site in a location not too remote from the city, the amount of ground required will add greatly to the beauty of the institution and the comfort of the inmates. It will require, however, a tract containing not less than 15 acres and, unless ground can be secured exactly adapted to the purpose, a greater area.

This with the hospital buildings and equipment will necessitate an appropriation of about \$100,000. If the distance from adjacent buildings be fixed as 40 feet, which is ample, a site containing about four acres will be sufficient and the cost will be proportionately reduced.

THE SMALLPOX OUTBREAK.

On Sunday, October 21, 1894, I was requested to send an inspector to examine a patient suspected of having smallpox. There was not, so far as was known at that time, a case of the disease in the city, nor had there been since Remus Nelson died in the smallpox hospital May 22, 1894. Investigation, however, proved the suspicion to be correct. That patient was a colored girl who had worked in the family of a

clerk employed in the Interior Department since their return on September 15 from a visit to Vermont. Just fifteen days after their arrival home it had been noticed that the youngest child, a girl about eighteen months old, was sick. A physician was called in, and later a second, and it was decided that the patient was suffering from measles and chicken pox. Death occurred October 13, the body being interred privately on the same day. The cause of death was certified by the attending physician as confluent chicken pox. Eight days later the servant girl above referred to was removed to the smallpox hospital as a suspect. The following day she was officially declared to have smallpox and the death of the infant officially declared to have occurred from the same cause. The houses in which both cases had occurred were at once quarantined and disinfected, and the inmates vaccinated. The city was at this time without any organized smallpox service, so that the vaccination and disinfection were done under the immediate supervision of the medical sanitary inspector, Dr. Austin O'Malley, and myself.

The following day another case was reported, the disease having been contracted by washing clothing from the house where the child had been sick. Dr. J. R. Nevitt had already been appointed physician in charge of the smallpox hospital. Dr. Benjamin M. Beall was now appointed smallpox inspector and Dr. Austin O'Malley designated to superintend all disinfection. Ground and buildings at the corner of Eighteenth and D streets S. E. were rented for a quarantine station and new quarantine regulations were issued.

October 24 three cases were reported. Two had been employed in the Interior Department and had come in contact with the father of the dead child prior to her death. Other cases were reported from day to day among employees of this Department until, October 29, five of the employees had been stricken down. The excitement was intense over the entire city, but was most so among the employees of the Interior Department. The immense building was closed and thoroughly disinfected October 27 and November 3, 1894, employees were not allowed to work unless they were vaccinated, and all outgoing mail was fumigated. Not another case was traced to this source after October 29.

New patients were reported from time to time, amounting in all to twenty, but by the middle of December there were but three known cases. On the 21st of that month, however, two cases were discovered in another locality and were traced to a fatal case of hemorrhagic smallpox which had been diagnosed as puerperal fever. Dr. Llewellyn Eliot was now designated to take charge of the hospital, Dr. Nevitt having temporarily left the city. The second series of cases dates from this time and continued until March 13, 1895, when the last case was reported. The last case was pronounced cured April 18 and the hospital disinfected and made ready for new cases. Fortunately they have not occurred.

Owing to the absence of any organized smallpox service at the commencement of the outbreak and the necessity for employing men not familiar with the duties imposed upon them, the record of the outbreak is unfortunately not as complete as might be desired. During its existence from September 30, 1894, to March 13, 1895, there were 56 cases and 8 deaths; among the whites 20 cases and 3 deaths and among the colored 36 cases and 5 deaths. Of the cases, 31 were variola and 25 were varioloid; 25,300 vaccine points were purchased and used by this department, representing approximately that number of free vaccinations. The approximate cost of the outbreak was \$15,000.

The valuable assistance rendered by Dr. Walter Wyman, Supervising Surgeon-General Marine-Hospital Service, deserves special acknowledg-

ment. The faithful service of the employees was so general that special mention is impracticable.

The history of the epidemic will be found at greater length elsewhere in this report. The lessons to be learned may be stated here. The need of a suitable hospital properly equipped for such emergencies as this has been practically recognized by an appropriation to construct and equip such an institution. The amount appropriated, \$18,000, is not sufficient for the purpose, and an additional appropriation should be asked for. The number of citizens found by investigation to be unvaccinated was entirely too large. Vaccine physicians should be employed constantly to vaccinate those unable to pay for such service, and the law relating to the admission of unvaccinated children and others to schools and institutions should be rigidly enforced; and, finally, there should be an epidemic fund at the disposal of this department. Forced economy of men and appliances at the outbreak of an epidemic is apt to be as disastrous as it is at the outbreak of a war. The general emergency fund may be drawn upon for too many purposes to make it safe to rely upon it for use in case of an epidemic, and the amount available for the coming year for all these purposes is less than the cost of the small outbreak of variola during the year just ended.

RELIEF OF THE POOR.

The work done in this service by the health department is shown in the following table:

TABLE H.—*The sick poor.*

Month.	Patients treated.	White.	Colored.	Visits made.	Office consultations.	Cost of medicine furnished.
1894.						
July.....	976	387	589	1,500	179	\$206.60
August.....	1,303	579	724	2,155	240	287.90
September.....	1,346	572	774	2,133	255	306.80
October.....	1,297	521	776	2,118	250	303.25
November.....	1,537	625	912	2,380	336	323.65
December.....	1,111	476	635	1,794	260	252.55
1895.						
January.....	1,711	686	1,025	2,440	381	404.85
February.....	1,796	651	1,145	2,900	274	480.65
March.....	1,268	488	780	1,950	229	253.15
April.....	935	390	545	1,464	176	166.05
May.....	1,019	438	581	1,517	225	199.65
June.....	851	373	478	1,274	168	156.00
Total.....	15,150	6,186	8,964	23,625	2,973	3,347.10

TABLE I.—*The sick poor for thirteen years.*

Year.	Patients treated.	White.	Colored.	Visits made.	Office consultations.	Cost of medicine furnished.
1883.....	15,611	5,347	10,264	22,542	4,122	\$3,156.85
1884.....	16,121	5,022	11,099	22,633	5,088	2,900.10
1885.....	15,211	4,692	10,519	21,160	4,204	2,911.75
1886.....	16,901	5,430	11,471	21,824	5,659	3,862.75
1887.....	15,795	5,072	10,723	21,340	4,501	3,097.00
1888.....	15,352	4,745	10,607	21,722	3,934	3,607.00
1889.....	14,575	4,842	9,733	19,919	4,239	3,059.65
1890.....	16,576	5,619	10,957	22,547	4,410	3,352.25
1891.....	13,238	4,641	8,597	18,728	3,177	2,526.25
1892.....	12,637	4,338	8,299	16,746	2,997	2,503.08
1893.....	12,430	4,079	8,351	19,037	2,468	2,753.55
1894.....	16,109	6,112	9,997	26,210	3,356	3,636.36
1895.....	15,150	6,186	8,964	23,625	2,973	3,347.10
Total.....	195,706	66,125	129,581	278,033	51,128	40,713.69

In addition to the work properly belonging to those employed in this service, it has been for several years necessary to assign to them the duty devolving upon the health officer under section 7 of the regulations with regard to vital statistics, which is as follows:

That whenever a permit for burial is applied for, in case of death without the attendance of a physician, or if it be impossible to obtain a physician's certificate, it shall be the duty of the health officer to investigate the cause and circumstances of such death, to make and sign the certificate required by section 4 of these regulations, and if not satisfied as to the cause and circumstances of such death he shall so report to the board of health, who shall refer the case to the coroner of the District for investigation and report, and said coroner is hereby required to make such investigation and report.

The duty imposed by the above regulation should be transferred to the coroner's office in order to expedite the investigation of the cases therein referred to. Any such case may prove upon examination to be of criminal origin and valuable time be lost by the present method of having a preliminary investigation made by this office before it is referred to the coroner.

The compensation of the physicians to the poor, \$30 per month, is inadequate at all times, but especially so when, on account of the presence of smallpox, they have to vaccinate the poor by hundreds. An effort should be made to secure remuneration for the physicians to the poor for the extraordinary work done in this way during the past year, to increase the salary to \$40 per month, and to provide each one with a telephone.

In view of the ruling of the Treasury Department, which prevents a physician to the poor from being absent from duty even one day in the year without loss of pay, because his office is not created by law, it is requested that in submitting the estimates to Congress the appropriations specify the number of physicians to be appointed and the annual salary of each.

CEMETERIES.

There are now in this District 38 cemeteries in operation and 1 closed under the provisions of an act of Congress approved August 3, 1894. With the rapid increase in the population of the surrounding country, ground suitable for cemetery purposes is becoming scarce, and the necessity for laws governing their location and management is more apparent. There is at present no restriction upon the location of cemeteries, upon the number of graves in a given area, or upon the depth of graves; nor does the law require any record of interments and disinterments to be kept at the burying ground. While the majority of them are conducted in a satisfactory manner, there are some that are not.

The requirement (sec. 596, Rev. Stat.) that a plat of a cemetery, showing the location and number of each lot, be filed in the office of the recorder of deeds, has, according to the decision of that officer, been repealed by the act of August 24, 1894, which prohibits the filing of the plat of any subdivision in his office. There is, therefore, no way of officially recording the plats of cemeteries to be hereafter established.

Laws should be enacted to remedy existing defects.

The public burying ground, potter's field, situated on Reservation 13, is fast encroaching on the grounds belonging to the smallpox hospital. It will soon be necessary to purchase another site for its extension, or to erect a crematory in which the bodies of paupers can be burned. The latter plan is the better. An appropriation should be asked for that purpose.

PUBLIC BATHS.

This District has recently established a free bathing beach. It is available, however, only for a small part of the year and to a comparatively

small number of people. Many of the poor are at all times without sufficient means of securing personal cleanliness. As a matter relating to public health this is of interest to the entire community, but especially to the large number of householders who find it necessary to employ domestic servants but are unable to provide bathing facilities for them. Public baths should be provided for their accommodation.

FOOD SUPPLY.

It has been the aim of this office to prevent absolutely the sale of unwholesome or decayed food. The general food supply has been throughout the year fairly satisfactory from a sanitary standpoint. Reference to milk and other dairy products will be found in the appendix, in the report of the inspector of dairy products. A statement of the amount of food condemned during the past year is given in the following tables by months and, for purposes of comparison, the total amount condemned each year for the past nine years is also given:

TABLE J.—Unwholesome food condemned during the year ended June 30, 1895.

Articles.	1894.						1895.						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Beef.....pounds..	2,072	2,811	1,904	1,899	1,995	586	630	100	850	1,928	2,440	2,877	20,092
Mutton.....do....	825	1,773	968	1,096	991	592	454	165	680	1,112	1,558	1,510	11,724
Veal.....do.....	349	504	307	243	203	113	45	50	101	353	456	399	3,123
Pork.....do.....	120	292	309	272	160	373	93	70	450	445	514	1,006	4,102
Bacon.....do.....	840	58	35	45	55							1,445	2,478
Sausage.....do.....	15	10	5	145	285	189	57	41	279	177	237	65	1,505
Venison.....do.....				30	35								65
Chickens.....number	95	47	159	35	115	438	49	32	26	349	31	84	1,460
Turkeys.....do.....				36	60	68	13	2	1				180
Duck.....do.....					4	15	16	22	16	6			79
Geese.....do.....									5				5
Birds.....do.....		60	258	295	228	154	368	113	66	34		168	1,744
Rabbits.....do.....				302	543	547	408	41	9				1,850
Squirrels.....do.....				28	10	16	5						59
Apples.....bushels..	7	72	8	6	7								100
Peaches.....do.....	3	5	23	4								2	37
Pears.....do.....		30	49	21	4								104
Plums.....do.....		1	44									9	54
Bananas.....dozen..	922	40	906	26			25	20	30				1,969
Oranges.....do.....				30			347	240	134	60		4	815
Lemons.....do.....		16	1,500										1,560
Grapes.....pounds..	50	2,898	1,375	1,105	320		30					14	5,748
Berries.....quarts..	1,230	38	60							168	476	1,722	3,694
Cherries.....do.....											32	1,098	1,130
Cantaloupes.....number	540	7,584	4,403	120	80							740	13,467
Watermelons.....do..	285	2,254	373	20								15	2,947
Pineapples.....do...	47										20	20	87
Asparagus.....bunches	17						240			60	1,737	1,404	3,458
Beets.....do.....	110	121	68								20	111	430
Carrots.....do.....													
Celery.....do.....			220	38	547	455	170						1,430
Radishes.....do.....	20				100								3,199
Rhubarb.....do.....									1,592	810	677		3,085
Lettuce.....heads..	165	16		168	16				115	260	620		2,050
Cabbage.....do.....	412	925	817	341	308	347	520	1,090	2,487	630	1,600	2,250	4,945
Cynilings.....number	390	3,384	933	25			240			590	2,240	1,999	12,076
Eggplants.....do...	970	419	619	936	89	490	800			1,410	2,100	8,482	
Cauliflower.....do...	40			730	493	68	130	60			30	120	4,443
Pumpkins.....do.....													1,551
Corn.....dozen.....	144	338	310	123	2			10				261	1,178
Cucumbers.....do....	471	64	101									276	3,402
Kale.....bushels..				2	14	6	1,800				690		384
Spinach.....do.....									13	256	93		73
Parasnips.....do....									14	39	20		240
Potatoes.....do.....	7	8	13	11		18	12	106	2		10	53	227
Peas.....do.....	6	2	7								157	54	333
Beans.....do.....	4	1									114	150	129
Turnips.....do.....		2			16	8	40					5	290
Tomatoes.....do....	29	112	79	59	21	31	3	10	33	18		1	242
Onions.....do.....	1	24	1	6			3	3				103	101
Eggs.....dozen.....	12	1,772	13		13	142	87	77	30	43	73	114	2,377
Miscellaneous fruits and vegetables.....bushels	33	47	41	49	51	39	30	19	51	52	80	244	736

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TABLE K.—Unwholesome food condemnations for nine years ended June 30, 1895.

Articles.	1887.	1888.	1889.	1890.	1891.
Beef.....pounds..	21,803	20,534½	20,990	28,504	13,169½
Veal.....do..	5,661	2,736	5,773	7,160	5,233
Mutton.....do..	16,808	15,693	15,954	16,244	11,570
Bacon, ham, and pork.....do..	4,503	2,533	2,218½	4,536	4,850½
Birds, rabbits, and squirrels.....number..	1,766	2,989	2,950	6,998	3,030
Poultry.....do..	9,261	9,722	8,226	5,874	4,310
Eggs.....dozen..	8	250	40	738½	.....
Cheese and butter.....pounds..	60	10	.....	.....	.....
Potatoes and parsnips.....bushels..	914½	1,191½	463½	1,057½	381½
Beans, peas, and onions.....do..	1,061	838½	1,328½	917½	236½
Cabbage and lettuce.....heads..	48,212	43,169	36,662	43,507	29,529
Squashes and pumpkins.....number..	3,512	5,584	4,449	6,912	5,479
Corn.....dozen..	1,924	2,589½	1,506	2,394	1,633
Cucumbers.....do..	6,467	5,876	4,665	6,848½	5,656
Eggplants.....number..	1,727	6,924	2,993	1,961	3,958
Tomatoes and turnips.....bushels..	829½	1,256½	1,191	1,012	1,110½
Kale and spinach.....do..	284	1,787½	412½	907½	294½
Apples, peaches, pears, and plums.....do..	815	917½	881	824½	286½
Watermelons.....number..	13,902	16,543	5,721	11,446	9,608
Cantaloupes.....do..	12,043	22,712	13,501	11,739	8,815
Berries.....quarts..	6,091	3,793	9,852	4,937	6,618
Oranges and lemons.....dozen..	5,011	3,310½	1,594	520	521
Bananas.....do..	596	5,500	440	354	1,652
Grapes.....pounds..	4,480½	3,929	3,368	3,349	3,014
Miscellaneous fruits and vegetables.....bushels..	2,074½	1,993½	3,166	2,479½	1,968½
Miscellaneous vegetables.....bunches..	10,292	11,446	11,454½	13,043	10,098

Articles.	1892.	1893.	1894.	1895.	Total.
Beef.....pounds..	18,785	20,583½	15,963½	20,092	180,425½
Veal.....do..	5,614	3,620	2,372	3,123	41,291
Mutton.....do..	14,560	11,906½	6,084½	11,724	120,543
Bacon, ham, and pork.....do..	9,877	5,654½	2,423	8,085	44,680½
Birds, rabbits, and squirrels.....number..	3,249	2,059	2,605	3,683	29,329
Poultry.....do..	3,984	6,275	1,191	1,724	50,567
Eggs.....dozen..	547	269	605	2,377½	4,834½
Cheese and butter.....pounds..	.....	.....	216½	245	70
Potatoes and parsnips.....bushels..	732½	1,787½	.....	.....	6,990
Beans, peas, and onions.....do..	348	828	339½	802½	6,799½
Cabbage and lettuce.....heads..	18,904	30,435	20,071	17,021	287,516
Squashes and pumpkins.....number..	4,722	8,544	9	50	39,261
Corn.....dozen..	1,341	9804	951	1,178½	14,497½
Cucumbers.....do..	2,596½	5,832½	2,060½	3,402	43,434
Eggplants.....number..	2,353	5,160	3,485	4,443	33,004
Tomatoes and turnips.....bushels..	1,063½	354	389½	419½	7,626
Kale and spinach.....do..	444	390½	600½	457	5,577½
Apples, peaches, pears, and plums.....do..	1,089½	191	744½	295	6,045
Watermelons.....number..	19,830	1,625	3,184	2,947	84,806
Cantaloupes.....do..	15,528	6,449	15,367	13,467	119,621
Berries.....quarts..	5,742	6,236	4,993	3,694	51,956
Oranges and lemons.....dozen..	371½	231	143	2,375	14,077½
Bananas.....do..	984	316	3,516	1,969	15,327
Grapes.....pounds..	7,860	2,958	3,325	5,748	39,031½
Miscellaneous fruits and vegetables.....bushels..	691½	571	520	1,953	15,417
Miscellaneous vegetables.....bunches..	14,213	15,308	16,372	19,545	121,771½

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TABLE L.—*Inspections and condemnations of marine products for year ended June 30, 1895.*

	1894.					
	July.	August.	September.	October.	November.	December.
INSPECTIONS.						
Oysters.....bushels..	200	1,450	15,700	65,800	75,700	79,300
Clams.....number..	900,000	740,000	321,000	28,000		
Crabs.....do.....	276,900	267,200	149,900	15,000		
Mackerel.....do.....	13,193	28,692	8,319	477		
Sheepshead.....do.....		412	14	14		
Striped bass.....bunches..	1,897	1,988	6,024	13,309	3,660	
Bluefish.....do.....	9,756	8,244	8,357	3,611	2,099	
Croakers.....do.....	8,551	3,171	1,501	836	2,298	
Eels.....do.....	120	43	41	458	591	81
Sturgeon.....number..	40	80	32	1		
Pike.....bunches..				871	1,213	1,041
Perch, yellow.....do.....	449	433	429	406	2,257	3,230
Perch, white.....do.....	1,257	1,222	2,283	2,960	2,366	1,098
Trout.....do.....	12,980	9,625	8,551	7,240	9,040	3,864
Catfish.....do.....	2,401	1,831	2,192	6,476	3,099	3,547
Mulletts.....do.....	481	397	1,179	1,822	1,388	954
Turtles.....number..	2	6		5		
Spots.....bunches..			240	200		
Drumfish.....number..		34	34	18		
Chnbs.....bunches..				870	3,060	3,045
Carp.....number..	31	65	132	214	181	195
Flounders.....bunches..				429	338	
Shad, winter.....do.....			927	2,786	1,572	1,061
CONDEMNATIONS.						
Oysters.....bushels..			375	308		
Clams.....number..	27,600	17,400	5,700	500		
Crabs.....do.....	50,700	70,250	32,200	3,700		
Fish.....bunches..	265	597	1,321	761	883	376
Mackerel.....number..		39				
Turtles.....do.....			6			
Drumfish.....do.....		12				
Sturgeons.....do.....	1					

		1895.					Total.	
		January.	February.	March.	April.	May.		June.
INSPECTIONS.								
Oysters.....bushels..		64,400	11,550	40,900	18,000	2,000		375,000
Clams.....number..						842,000	1,059,000	3,890,000
Crabs.....do.....						51,700	100,600	861,300
Shad.....do.....				27,256	459,165	131,321	5,568	623,310
Herring.....do.....		25		714,999	8,098,000	1,292,600	8,600	10,114,224
Mackerel.....do.....							7,512	58,193
Sheepshead.....do.....					52		225	717
Porgies.....do.....							36	36
Striped bass.....bunches..		387	147	11,295	3,383	1,122	4,420	47,632
Bluefish.....do.....					160	2,967	12,080	47,274
Croakers.....do.....		420		480	2,060	9,123	9,820	38,260
Eels.....do.....				222	1,022	655	301	3,530
Sturgeon.....number..							349	760
Pike.....bunches..		548	168	1,338	28		76	5,284
Perch, yellow.....do.....		1,898	548	9,046	1,850	18	19	20,583
Perch, white.....do.....		1,510	597	5,133	3,593	1,019	1,164	24,202
Trout.....do.....		2,613	1,888	798	190	31,570	20,510	108,869
Catfish.....do.....		1,336	250	5,393	8,199	4,625	5,188	44,537
Mulletts.....do.....		1,973	2,330	1,631	590	172	293	13,210
Turtles.....number..								86
Spots.....bunches..				2		8	52	820
Drumfish.....number..						220	160	102
Chnbs.....bunches..		5,045	1,755	1,500			16	15,875
Carp.....number..		39	23	262	309	349	191	1,991
Tailors or hickory-jacks, number								
Flounders.....bunches..				2,301	7,205			9,506
Shad, winter.....do.....		113		22		80		892
Bass, black.....number..			1,371					7,830
Butter-fish.....bunches..				62	98			160
CONDEMNATIONS.								380
Oysters.....bushels..				4	500	210		1,387
Clams.....number..								73,300
Crabs.....do.....						6,100	16,000	194,570
Shad.....do.....						9,100	28,620	324
Herring.....do.....						64	260	723,400
Fish.....bunches..					462,500	260,900		11,215
Mackerel.....number..		175	33	253	1,114	933	4,504	39
Turtles.....do.....								18
Sheepshead.....do.....							12	66
Drumfish.....do.....					52	14		12
Sturgeons.....do.....								6
						2	3	

PROPOSED ABATTOIR.

The inspection of meat would be greatly facilitated by the establishment of a public abattoir. Such an institution would render practicable an examination of live stock prior to slaughter. It would prevent unnecessary cruelty in butchering and would do away with the numerous slaughterhouses now scattered throughout the District to the annoyance if not the injury of neighbors and the depreciation of the value of adjoining property. The advantages in slaughtering at a model abattoir, such as that at Bennings, considered either from the standpoint of hygiene or convenience, are evident. There exists, however, in the minds of some butchers objection to killing there, either because the establishment is controlled by men in the same line of business as themselves or because of the conditions imposed by its managers. These objections need not apply to an abattoir owned and operated by the city, and such an institution might be made a source of revenue.

The fish wharf belonging to the District is not properly constructed and equipped for its purpose. It should be reconstructed or a new wharf built in some other location.

COLLECTION AND DISPOSAL OF GARBAGE AND DEAD ANIMALS.

The garbage and dead animals of this city and District have been collected during the year by the successors of the National Sanitary Company, the garbage being carried down the river on scows and there delivered to farmers, to be used as fertilizer; the dead animals being similarly transported to the rendering establishment of Mr. Patrick Mann, a short distance below this city. The citizens of Alexandria at times complained bitterly of the stench from garbage scows anchored opposite that place and finally took the law into their own hands, sinking the scows whenever they became troublesome. The citizens of Washington who desired to enjoy excursions down the Potomac would probably have taken similar measures in reference to Mr. Mann's establishment had it been possible.

The contract for the collection of garbage and dead animals was entered into January 21, 1892, with Benjamin W. Clark. It provided for the collection and removal of all garbage from dwellings and boarding houses in the cities of Washington and Georgetown and their more densely populated suburbs three times per week from the 1st day of April to the 1st day of November, and twice per week from the 1st day of November to the 1st day of April in each year, and from markets, hotels, and other like places daily or oftener, as necessity required. Dead animals were to be collected daily, including Sunday, during the entire year. Both garbage and dead animals were to be transported beyond the limits of the District of Columbia twice daily during the summer period and once each day during the winter. For this service the contractor was to receive \$24,400 per annum.

A special appropriation of \$1,000 per month was made to provide for the daily collection of garbage during July, August, and September, 1894, and a similar appropriation was made later for the months of May and June, 1895. Daily collections were made therefore in the territory between Sixth and Seventeenth, B and P streets NW. The total amount paid to the contractor for the collection and removal of garbage and dead animals for the entire year was therefore \$29,400, less \$268.50 paid to garbage inspectors appointed by this office, but charged to the contractor in accordance with the terms of the contract.

At the beginning of the year covered by this report the contract had already been assigned by Mr. Clark to the National Sanitary Company. This company had failed and Messrs. Edwin Warfield and M. W. Adams, both of Baltimore, Md., had been appointed receivers. Another change occurred on January 4, 1895, when the receivers assigned to Mr. Edwin Warfield all rights and interests in the contract and all property, real, personal, and mixed, belonging to the defunct National Sanitary Company. It was finally terminated on June 30, 1895, by mutual agreement between Mr. Warfield and the Commissioners of the District of Columbia, a new contract having been entered into with Mr. Warfield under new specifications for a period of four months, commencing July 1, 1895.

The service during the past year was far from being a model one. The total number of complaints received at this office during the twelve months was 4,142. Some of these were due to carelessness on the part of householders, but many to neglect on the part of the contractor. Unfortunately there was no remedy for either until the appropriation act of March 2, 1895, authorized the Commissioners to make necessary regulations for the collection and disposition of garbage in the District of Columbia, and to annex to said regulations such penalties as would secure the enforcement thereof, and further authorized the termination of the then existing contract and the making of a new one.

In accordance with the authority first mentioned the following regulations have been promulgated, and will, it is believed, prevent negligence on the part of householders:

GARBAGE REGULATIONS.

SECTION 1. The word "garbage," wherever it occurs in these regulations, shall be held to mean the refuse of animal or vegetable matter which has been used or intended for food.

SEC. 2. Occupants of dwelling houses, proprietors of boarding houses, commission warehouses, hotels, restaurants, and other places where garbage is accumulated, and owners or occupants of apartment or tenement houses, shall provide for the use of such premises a sufficient number of water-tight metal receptacles to contain all garbage which may accumulate on said premises during the usual interval between the collection of garbage therefrom, and shall keep such receptacles at all times water-tight and in good repair. Each such receptacle shall have a tight cover, provided with a handle. No person, without a permit from the health officer, shall use for the reception of garbage any receptacle having a capacity of less than 3 or more than 10 gallons, nor more than one receptacle containing less than 10 gallons.

SEC. 3. Occupants of any dwelling house, apartment, or tenement house, and each proprietor of any boarding house, commission warehouse, hotel, restaurant, and other place where garbage is accumulated, shall cause all garbage from his or her premises to be put into the receptacle provided for that purpose. Each person aforesaid shall cause such receptacle to be kept covered at all times and to be placed and to remain, between the hours of 7 o'clock a.m. and 6 o'clock p.m. of each day on which the collection is made from his or her premises, in such position as to be easily accessible to the garbage collector, or as may be designated by the health officer. No person shall place or cause to be placed in any garbage receptacle any substance other than garbage.

SEC. 4. Owners of premises, from which garbage is to be removed, having street and alley entrances shall place conspicuously at the alley entrance thereof the street and number designations in letters and figures, respectively, not less than 2 inches in height, so as to be easily read.

SEC. 5. It shall be unlawful for any person to alter, deface, or destroy any name of any street or number required to be displayed by these regulations.

SEC. 6. It shall be the duty of any person or persons having possession, custody, or care of meat, fish, vegetables, or provisions of any kind intended for sale as food, but which has become unfit for such use, to forthwith remove such meat, fish, vegetables, or provisions to such place as has been designated by the health officer for such purpose. It shall be unlawful for any person or persons to knowingly bring or cause to be brought into the District of Columbia any diseased, spoiled, or decayed meat, fish, vegetables, or provisions of any kind intended for food.

SEC. 7. No driver, owner, or superintendent, having charge or control of any cart or other vehicle for carrying garbage, shall allow such cart or vehicle to needlessly remain, nor allow a needless number of such carts or vehicles to gather before any residence, building or place of business within the city of Washington or the more densely populated suburbs thereof; nor allow any such cart or vehicle, or anything thereto appertaining, to be in a condition needlessly filthy or offensive; nor allow any such cart or vehicle, or implement used in connection therewith, to be stored or kept in any place where needless offense is given to any person or persons. No driver of any such cart or vehicle shall occupy an unreasonable length of time in loading or unloading such cart or vehicle or in passing along any alley, street, avenue, or public road, nor allow the lid or cover of any such cart or vehicle to be otherwise than securely closed, except as may be necessary for the loading or unloading and cleaning of any such cart or vehicle.

SEC. 8. No person other than the owner or authorized collector shall interfere with or disturb any garbage after it shall have been put in a garbage receptacle and placed in an accessible place for collection; nor shall any unauthorized person molest, hinder, delay, or in any other manner interfere with any garbage collector in the discharge of his duty.

SEC. 9. No person or persons other than such as hold permits from the health officer shall haul any garbage through or over any street, alley, or avenue in the city of Washington or its more densely populated suburbs, and each cart or other vehicle used for such purpose shall have the word "Garbage" and the number of the permit in large white letters on a black ground plainly printed or attached to each side of the wagon bed. No cart or other vehicle shall be used for the collection of garbage except such as are water-tight and provided with tight-fitting covers, and such as have been approved by the health officer.

SEC. 10. Any person violating any of the provisions of these regulations shall, on conviction thereof in the police court, be punished by a fine of not less than \$5 nor more than \$50 for each and every offense, and in default of payment of such fine shall be imprisoned in the workhouse of the District of Columbia for not more than thirty days.

And in accordance with the other authority contracts for the collection and cremation of garbage and dead animals have been made to cover a period of five years, beginning July 1, 1895, under the following specifications, among others:

SPECIFICATIONS.

General requirements of proposals.

3. All garbage and dead animals must be collected and disposed of in a manner, in the opinion of the health officer, not prejudicial to the public health nor creating a nuisance; the method and plant to be furnished by the contractor, to be subject to the approval of the Commissioners.

6. All garbage and dead animals must be transported, either within or without the District of Columbia, in covered conveyances, satisfactory to the health officer.

7. Ordinarily inspectors will be employed by the Commissioners of the District of Columbia; but if, on account of any apparent disregard of the specifications on the part of the contractor, additional inspectors shall be required, they will be employed by said Commissioners, at the rate of \$3 per diem, in such number as in the opinion of said Commissioners may be necessary, and the cost of the same will be charged to the contractor and deducted from any money due or which may become due to him.

9. Failure to commence the work at the time specified, or to prosecute it thereafter in a satisfactory manner, in the opinion of said Commissioners, will be authority for them to suspend the contractor from the work and to employ such parties to complete it, or to wholly annul said contract. All money due the contractor at the date of suspension or annulment will be applied to the conduct of the work, and any excess of cost over and above the amount so retained will be charged against the contractor and his sureties, who will each and severally be held liable therefor.

General regulations.

1. The term "garbage," wherever it occurs in these specifications, shall be held to mean all refuse of animal or vegetable matter which has been used or was intended to be used as food for man.

The term "dead animals" shall be held to mean all dead animals or parts thereof not intended for use as food.

2. Garbage shall be called for and removed from all buildings within the city of Washington daily, including Sundays, at such times and places as said Commissioners deem necessary, and in its most densely populated suburbs, as said suburbs may

be from time to time designated by said Commissioners, three times a week from April 15 to November 1 each year; and twice a week, and daily, including Sundays, from hotels and other like places from November 1 to April 15 each year. All garbage must be collected between the hours of 7 o'clock a. m. and 6 o'clock p. m. Special collections at other hours may be authorized by the health officer. Dead animals shall be collected and removed daily, including Sundays, within the District of Columbia during the entire year.

3. All garbage shall be collected and disposed of in a manner, in the opinion of the health officer, not detrimental to public health, and shall be deposited and disposed of only at such place or places as may be approved by the health officer. The contractor for the collection of garbage and dead animals will be required to deliver to the contractor for the disposal of same all garbage and dead animals collected by him and will have no ownership in them. Such garbage and dead animals, or any residue or product therefrom, shall be the property of the contractor for the disposal of said garbage and dead animals after they have been delivered to him by the contractor for their collection.

4. Garbage will be deposited in water-tight, covered vessels, which can be easily and quickly handled by one man, and will be placed at points readily accessible to garbage collectors. Larger receptacles will be allowed in the case of hotels, etc., under such restrictions as the health officer may determine. In the event of disputes between householders and the contractor as to the point at which garbage shall be deposited for collection the case shall be referred to the health officer, whose decision shall be final.

5. Each garbage collector shall notify householders of his approach in such manner as may be directed by the health officer. Collectors will not be allowed at any time to pick or sort garbage, and must transfer it from the garbage receptacles of householders to the cart or other vehicle used for collections without unnecessary delay or exposure and without spilling.

6. The contractor shall, before commencing work, subdivide the entire district from which garbage and dead animals are to be collected into collection districts, and shall assign to each collection district a distinctive number, and shall file with the health officer a map showing the boundaries of each district and the number assigned to it. No changes shall be made thereafter in such collection districts, except with the written consent of the health officer.

7. The contractor shall, at his own expense, provide telephone connection with the health department, and shall be prepared to receive and to promptly execute all orders of the health officer. Upon the failure of the contractor to execute any order for the removal of any dead animal within ten hours, and for the removal of any garbage within twelve hours, after notice from the health officer, said officer shall cause the same to be removed and shall enter against the contractor the cost of such removal, not to exceed ten dollars (\$10) in any one case, and such cost shall be deducted from any money due, or which may become due, the contractor, and shall be paid to the party making such removal or collection.

The contractor shall report twice a day to the health officer for orders, at such times as the health officer may direct.

8. The contractor shall issue cards, to be approved by the health officer, stating the days for collecting garbage in particular streets or districts, and designating between what hours the collector will call in a special locality. One or more copies of such cards shall be left between April 1 and 14 each year, and between October 15 and 31 each year, at each and every building from which garbage is to be collected, and whenever it is proposed to make any change in the time of making collections, and prior to making such change, one or more copies of such cards, showing the proposed time of collection, shall be left at each building affected; a supply of such cards shall be left at all times at the health office. The contractor may be fined for neglect to serve the cards above referred to 5 cents for each card omitted to be served, to be deducted from any money due, or which may become due, to him.

9. Receptacles for the collection and removal of garbage, whether cans, barrels, or the body of the cart or wagon, must be metal, water-tight, strongly built, provided with close-fitting metal covers, and must be kept thoroughly clean; but no receptacle shall be used having a capacity of less than 30 gallons. When in motion on streets or avenues said receptacles shall have their tops entirely and tightly covered, and while being loaded covered not less than one-half.

All carts and other vehicles used in the service must be strongly built and kept thoroughly clean and well painted, and must have the words, "public garbage service," and the number of the cart or vehicle, painted on each side thereof in letters 4 inches in size to be easily read, and kept clean and always legible.

Vehicles used for the collection of dead animals shall be such as can be quickly loaded, and must be so constructed as to permit the removal of any animal or part of animal without offense to the public.

None but strong, serviceable horses or mules shall be used in any cart or vehicle, and no person under 18 years of age shall be employed on the work.

The contractor must present all vehicles used by him for the collection of garbage and dead animals for inspection at such time and places as may be designated by the health officer, and all such vehicles shall be maintained at his expense in a condition satisfactory to the health officer.

The contractor shall provide and use at his own expense such disinfectants as in the opinion of the health officer may be needed.

10. The contractor shall not engage in the collection of garbage and dead animals otherwise than as provided in these specifications, and no cart or other vehicle engaged in the public collection of garbage or dead animals shall be employed for any other purpose, except with the written consent of the health officer.

11. Any official or employee using improper language, being under the influence of liquor, demanding payment for services rendered, or falsifying any report he may be called upon to make, shall at once be discharged by the contractor and debarred from further employment on work under the contract.

12. If any of the streets or alleys are obstructed by ice and snow, or from other causes, the contractor will be required to have the garbage removed to vehicles on streets which are not obstructed.

13. All work shall be done and performed under the supervision of the health officer, or such other officer as said Commissioners shall designate for that purpose, and all details of such work as are not herein particularly specified shall be done in such manner as shall be acceptable to the health officer, or such officer as may be designated.

14. Daily reports, in duplicate, shall be made by the contractor to the health officer on blanks approved by that official, which shall show the collection district, the number of each vehicle employed therein, the number of full or parts of loads of garbage collected therein, and the number of dead animals collected from the entire area for which such collection is required by the contract, and shall also show the number of men and horses employed with each vehicle.

The contractor shall furnish in writing such information in reference to the conduct of the work, as may be called for from time to time by the health officer.

15. For each complaint of neglect by the contractor of any of the requirements of the contract which in the judgment of the health officer is well founded, a fine of not less than one dollar (\$1), nor more than five dollars (\$5), except as otherwise specified herein, may be imposed, and deducted from any money due, or which may become due, the contractor. The imposing and collecting of any fine will not be construed, however, as waiving the right to annul the contract.

Absence of any employee will not be considered sufficient excuse for failure to collect, or for improper collection of garbage. The use of unlawful receptacles, or the placing of such receptacles by householders in inaccessible places, will not be considered a sufficient excuse for more than two successive failures to collect garbage at one place, unless the contractor shall have notified the health officer in writing of such neglect on the part of householders prior to complaint of noncollection.

The contractor will be required to furnish the health officer daily a complete list of failures on his part to comply with any of the terms of his contract which have come to his notice during the preceding day, and the reasons for such failures.

16. From the amount of the contract price for cremation, reduction, or otherwise disposing of garbage and dead animals, there may be deducted a sum not to exceed two dollars and fifty cents (\$2.50) per day, to be paid to a weigher, appointed by said Commissioners, whose duty it shall be to weigh and keep a record of all garbage brought to the establishment for cremation or reduction, and said weigher shall have general oversight of the sanitary condition of the establishment.

Under these specifications the health officer can impose upon the contractor fines for neglect; he can collect garbage and dead animals and charge the cost of such collection to the contractor, and he can employ garbage inspectors at the contractor's expense. It is hoped that an improved service will result when the new contract goes into operation.

The amount of garbage collected during the year by the contractor was 23,227 $\frac{3}{4}$ tons. The amount collected during the year preceding was but 14,172 tons. These figures are unfortunately furnished by the contractor and are not determined by actual weight, but by a method of estimating. The remarkable apparent increase in the amount collected during the past year over that collected during the year preceding, without any sufficient cause, either in an improved service, a diminished number of private collectors, or a change in the population, either as regards number, habits, or diet, will, until some explanation is offered, discredit the figures for both years.

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The amount of garbage and night soil and the number of dead animals collected during the past year is given by months in Table N, and similar figures are given by years for the past thirteen years in Table O. Garbage collected by private collectors is not included.

TABLE M.—*Offal removed during the year ended June 30, 1895.*

Month.	Dead animals.	Garbage.	Night soil.	Month.	Dead animals.	Garbage.	Night soil.
1894.	<i>Number.</i>	<i>Tons.</i>	<i>Barrels.</i>	1895.	<i>Number.</i>	<i>Tons.</i>	<i>Barrels.</i>
July.....	1, 196	1, 780 $\frac{1}{2}$	870	January.....	409	1, 758	480
August.....	1, 075	3, 484 $\frac{1}{2}$	820	February.....	370	1, 319	400
September.....	660	2, 992 $\frac{1}{2}$	970	March.....	460	1, 181	630
October.....	455	2, 146 $\frac{1}{2}$	1, 230	April.....	511	1, 169	740
November.....	342	2, 101 $\frac{1}{2}$	940	May.....	751	1, 927 $\frac{1}{2}$	920
December.....	221	1, 541	810	June.....	1, 061	1, 826	910
				Total.....	7, 512	23, 227 $\frac{3}{4}$	9, 720

TABLE N.—*Offal removed for thirteen years ended June 30, 1895.*

Year.	Dead animals.	Garbage.	Night soil.	Year.	Dead animals.	Garbage.	Night soil.
	<i>Number.</i>	<i>Tons.</i>	<i>Barrels.</i>		<i>Number.</i>	<i>Tons.</i>	<i>Barrels.</i>
1883.....	6, 560	9, 884	14, 507	1890.....	8, 344	23, 914	20, 554
1884.....	6, 433	12, 950	16, 896	1891.....	9, 910	24, 683	19, 671
1885.....	8, 876	12, 930	23, 827	1892.....	10, 528	22, 039	18, 640
1886.....	8, 808	14, 897	24, 244	1893.....	9, 649	14, 814	15, 725
1887.....	9, 120	15, 612	21, 941	1894.....	10, 340	14, 172	11, 284
1888.....	7, 863	20, 136	19, 743	1895.....	7, 512	23, 227 $\frac{3}{4}$	9, 720
1889.....	7, 954	27, 034	21, 669	Total.....	111, 897	236, 292 $\frac{3}{4}$	238, 421

PERMITS FOR GARBAGE COLLECTION.

Under certain conditions this department issues, upon request of householders, permits for the collection of garbage from specified premises by private collectors. While not assuming any responsibility for their work, this department revokes their licenses upon any neglect of duty on their part. An effort is constantly made to limit the number of such collectors, and to license only those who haul the garbage collected to places situated outside of the District. There were at the close of the year 190 licensed collectors, collecting from 1,322 places.

In compliance with the act of Congress of August 7, 1894, and in obedience to your orders, this department on March 1, 1895, made a special report as to the methods employed in the various principal cities of this country for the collection and disposal of garbage and dead animals. The absence of a sufficient appropriation to conduct the investigation upon which the report was based rendered it unsatisfactory and incomplete. In view of this fact and of its length it is not deemed advisable to incorporate it in this report.

DISPOSAL OF REFUSE.

The most important items in the maintenance of the health of the community are pure air, pure water, soil free from pollution, and a pure food supply. The purity and cleanliness of these depend largely upon the prompt and proper removal of all kinds of refuse matter, including excrement, garbage, ashes, and general refuse.

Excrement.—This is now accomplished by means of box privies or water-closets. The former method is in many instances rendered necessary by the absence of any sewer available for the premises on which the privy exists.

It is not necessary to explain the importance of sewers or to give a detailed statement of the localities where they are needed. It may be broadly stated that they are needed in every part of the District and especially in our rapidly growing suburbs, as Brightwood, Tennallytown, Takoma Park, Brookland, and others. It is greatly to be hoped that some general system of sewers will be constructed and in operation before an epidemic of cholera or a further increase in our already too high typhoid fever death rate occurs to emphasize the need of such a measure. Sewers will not, however, serve their purpose unless the owners of abutting property can be made to connect such property with them and to replace box privies with proper water-closets. A law should be speedily enacted to accomplish this purpose. Since sewers are constructed chiefly at public expense the Government should require that their use be not neglected by the individual to the detriment of the community.

Until the recommendations in the preceding paragraph are carried into effect it is well to clearly recognize the existence throughout the District of an indefinite number of privies constantly polluting the atmosphere and, in many instances, the soil and the well water. Since these must necessarily exist, for some time at least, they should be regulated by proper laws to replace or to supplement those now in force. The present law is defective in that it does not require that the privy box shall be placed upon an impervious foundation and so that it can be thoroughly inspected. A box half buried in the ground may leak around the bottom, and such leak pass undiscovered almost indefinitely. Another defect in the present law is the omission of any requirement for a permit for the erection of a privy. The result is that, owing to the small force of inspectors allowed this department, many defective privies exist for a long time without being discovered and inspected.

The present system of cleaning privies is radically bad, making it to the interest of the householders, from an economical standpoint, to have them cleaned as seldom as possible. The result is that in many cases they are allowed to overflow and become foul and filthy, and that the contents of the chamber utensils are secretly deposited in the nearest public sewer or in the imperfectly flushed sewer in the yard.

The system is analogous to a system of garbage disposal requiring the householders to remove and dispose of garbage at their own expense, and is about as bad. It need be no more expensive to the average householder and would be far better from a sanitary point of view, to levy a tax on privies, the income to be applied to the maintenance of a public scavenger service. By such a system every privy in the District of Columbia would be numbered and its location known. It would be cleaned and at the same time inspected at regular intervals by government employees, any defects being quickly discovered and corrected. Owners of rented property could, if they so desired, collect the privy tax from tenants by adding it to the rent, as is now usually done in the case of the water rent.

Garbage and dead animals.—This problem is discussed at some length in a preceding part of this report. If a sufficient number of inspectors be allowed to properly oversee the work of the contractor and to enforce the garbage regulations the service will be more satisfactory in the future than it has been in the past and probably as good as it can be made under the contract system.

Ashes.—Clean ashes, while not in themselves a nuisance, frequently attract in and about their place of deposit refuse matter of an objec-

tionable character. This occurs while they are accumulating in cellars and yards, and after they have been removed to the dump. So long as they are removed at the discretion of the householder and at his expense the time and method of removal will be determined by financial rather than by sanitary considerations. Provision should be made for their removal by a public scavenger service.

General refuse.—This term covers practically all forms of refuse not included under the terms excrement, garbage, and ashes. It is made up of sweepings of dwellings, stores, and shops, of discarded clothes, broken furniture, waste paper, etc., the indescribable conglomeration of material that usually finds its way to the dump. It has been customary for years to deposit such waste to fill in low ground.

Such places for deposit are, however, rapidly diminishing in number. This method of disposing of such matter is, moreover, objectionable from a sanitary point of view, the refuse usually containing a variable amount of putrescible matter which pollutes the atmosphere during the process of decay. Articles infected by contagious diseases, and imperfectly or not at all disinfected, may find their way to the dump, there to infect some of the poor people who throng thither to pick up whatever they can use or sell. And finally, the ground made by such filling does not form a proper substratum upon which to build, whether considered from the standpoint of the builder or of the sanitarian. The city must, in order to secure the proper collection and disposal of this refuse, itself undertake the work.

To inaugurate such a system I have asked for an appropriation for two crematories for the destruction of general refuse. It should be collected by the public scavenger service already suggested. The organization and maintenance of such a service will involve the expenditure of a very considerable sum of money, which must, of course, come from the taxpayers of the city. The question is, however, merely whether they will pay this sum at irregular intervals to individual collectors, and have their refuse collected and disposed of in an improper manner, or whether they will pay it to the government in the form of a tax and have a service properly organized and supervised.

CHEMICAL LABORATORY.

The details of the work done in the chemical laboratory will be found in the report of the inspector of dairy products in the appendix. Examinations have been made of 341 samples of water, 566 of milk and cream, and 20 of other substances. In six cases examinations have been made for the coroner to determine whether death was due to poisoning.

Systematic examinations have been made of water from each public well in the District. In thirty-two instances it was found contaminated, and it was recommended that the well be closed. In the early part of the year bacteriological examinations of suspected water were made in the laboratory of the Army or of the Marine-Hospital Service before taking final action, but the regular work of these laboratories has more recently been so great as to prevent them undertaking outside work. There should be renewed effort to provide the District with a properly equipped bacteriological laboratory in connection with the health department.

The analysis of milk was interfered with by the passage of the act to regulate the sale of milk and the changed conditions resulting therefrom. Investigations have been made of substances submitted by the coroner, the police court, and the police department. The equipment of

the laboratory is not, however, sufficiently complete to conduct the delicate tests required in cases of suspected criminal poisoning where the life or death of an accused person may depend upon the result. As this is the only laboratory at the disposal of the officers investigating such cases, the necessary apparatus should be supplied.

POUND SERVICE.

The work done in this service during the past year is shown in the following tables:

TABLE P.—Operation of the pound for the year ended June 30, 1895.

Month.	Impounded.							Disposition.				Fees collected.	
	Horses.	Mules.	Cows.	Hogs.	Goats.	Geese.	Dogs.	Total.	Redeemed.	Killed.	Dogs killed.		Sold.
1894.													
July	20	2	4	.....	2	.....	229	255	25	229	229	.....	\$50. 25
August	9	1	6	.....	2	.....	776	794	19	763	763	11	64. 50
September	4	.....	1	.....	1	.....	457	463	10	448	448	5	34. 50
October	11	.....	.....	.....	4	15	234	264	37	219	217	6	68. 75
November	4	1	3	.....	1	3	183	195	19	174	174	3	39. 50
December	6	1	1	.....	1	.....	232	241	11	222	221	8	44. 50
1895.													
January	2	.....	2	.....	.....	.....	100	104	4	98	98	1	11. 50
February	1	1	1	.....	.....	.....	29	32	1	30	29	.....	5. 00
March	6	.....	1	1	.....	.....	269	277	27	241	241	6	66. 25
April	5	.....	1	.....	.....	.....	301	307	21	272	272	13	79. 50
May	7	.....	5	.....	.....	.....	363	375	22	345	345	8	62. 75
June	5	.....	1	.....	2	.....	428	436	22	408	408	5	59. 50
Total	80	6	26	1	11	18	3,601	3,743	218	3,449	3,445	66	586. 50

TABLE Q.—Animals impounded during the thirteen years ended June 30, 1895.

Year.	Horses.	Cows.	Calves.	Mules.	Hogs.	Geese.	Sheep.	Goats.	Dogs.	Total.
1883.	15	204		2	2	80		66	3,007	3,376
1884	31	120		2	2	75		29	2,699	2,958
1885	15	52		4	2	48	3	64	3,190	3,378
1886	22	66		2	1	89	1	52	2,968	3,201
1887	21	87			2	16	2	50	2,880	3,058
1888	25	85		4	3	26		36	2,572	2,751
1889	27	64		3		14		17	2,581	2,706
1890	54	110		2		19		25	2,834	3,044
1891	60	131	1	5	2	78		26	2,523	2,826
1892	62	109		20	2	28	1	20	3,077	3,319
1893	76	38		5	2	3		33	2,963	3,120
1894	88	26		12			7	21	3,408	3,562
1895.	80	26		6	1	18		11	3,601	3,743
Total	576	1,118	1	67	19	494	14	450	38,303	41,042

The present condition of this department renders it advisable that ground be purchased and a stable erected for the accommodation of the horses and vehicles, six in number, now in its service. Three are located at the pound, an unsewered frame structure situated in the middle of New York avenue, near Twenty-third street. The others are kept in a stable in the rear of 224 Four-and-a-half street, NW., rented at a cost of \$180 per annum. At the pound are frequently kept horses and cows which have been taken up while running at large. There is also there constantly a number of dogs which have been impounded.

With the establishment of the municipal disinfecting service it will be necessary, if the pound service is to be properly maintained, to provide additional horses and vehicles for the collection and distribution of infected articles. The economical administration of this department requires therefore that a stable be erected for its use. It will be best to build this stable in connection with the pound. The present pound being in the roadway of New York avenue must necessarily be removed when the memorial bridge to Arlington is constructed, and in view of this it is not deemed wise to spend money to improve its present unsanitary condition, but better that it be replaced by a properly constructed pound on a new site.

SYNOPSIS.

The following is a synopsis of the work performed in this department during the year just ended:

Letters received, registered, and acted upon, 2,644. Others calling for official consideration and correspondence were received, but are not included in this number.

Complaints were made by citizens in 2,744 instances, and were investigated and disposed of as promptly as circumstances would permit.

The number and character of nuisances inspected during the year is shown in the following tables, first by months and then the totals, in comparison with similar data for the eight years preceding:

TABLE R.—Consolidated report of nuisances for the year ended June 30, 1895.

Nature of nuisance.	1894.						1895.						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Alleys, filthy.....	125	46	40	23	29	32	14	4	28	6	26	27	400
Alleys, need repair.....			4	7	5	1			1	1	4	1	24
Areas.....	1	5	5	3	2	1							32
Ashes.....	138	152	80	56	76	76	44	10	208	124	84	54	1,102
Cellars.....	9	15	11	1	14	7	15	6	10	17	9	18	132
Drainage, surface.....	51	82	76	36	63	27	10	16	16	25	50	98	550
Garbage.....	14	21	19	17	9	30	18	2	7	11	10	12	170
Gutters.....	4	8	13	12	6	1			1		2		49
Hogpens.....	2	1		8	4	4							26
Houses, filthy.....	2		2	2	8	2	1	1	2	6			23
Houses unfit for habitation.....	3	3	3	5	1	2		1	1	2	3	3	27
Houses, slaughter.....	3				1					1			5
Houses, no privy.....		1	5	4	20	7		1	4	2	1		51
Hydrants.....	11	5	15	19	8	10	13	6	20	5	2		114
Lots, filthy.....	4	17	22	19	14	31	12		17	13	27	18	194
Lots, stagnant water.....			4	3	2	5					2	1	17
Manure.....	3	16	16	26	41	30	20	3	20	12	13	36	236
Miscellaneous.....	516	461	165	175	235	152	82	39	140	134	251	269	2,619
Pipes, water.....	20	31	26	28	34	27	39	22	63	12	11	6	319
Privies, filthy.....	362	333	469	624	761	854	362	224	372	180	302	358	5,201
Privies, dilapidated.....	5	16	16	33	30	24	16	16	24	17	24	9	230
Privies, full.....	235	266	477	607	673	451	358	222	281	168	282	352	4,372
Privies, leaky boxes.....	62	46	88	75	122	101	24	17	27	27	66	91	746
Pumps.....	1			1	1						1		4
Roofs, leaky.....	3	1	1	6	1								21
Sewers.....	69	44	32	36	45	73	41	2	8	2	1	3	558
Sewers, connection.....	14	22	25	23	34	36	42	40	54	56	9	20	375
Stables.....	21	8	16	12	22	11	9	7	4	11	35	67	223
Stables, cow.....	2		2		5	1							20
Streets, filthy.....	2	5	9			2				2	1	5	23
Traps, sewer.....	23	12	31	43	21	12	9	10	19	26	8	9	223
Yards.....	220	239	141	177	269	298	99	20	281	143	163	191	2,240
Yards, cow.....			2	1					1		3	1	11
Vaults, privy.....													2
Water-closets.....	67	81	58	87	83	71	90	102	169	110	65	86	1,069
Total.....	1,992	1,937	1,873	2,174	2,639	2,380	1,323	780	1,852	1,169	1,499	1,805	21,423

TABLE S.—Consolidated report of nuisances for nine years ended June 30, 1895.

Nature of nuisance.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	Total.
Alleys	145	199	166	200	235	345	350	221	424	2,285
Areas	21	7	24	18	21	27	37	34	32	221
Ashes	91	80	179	141	141	757	1,488	1,894	1,102	5,241
Cellars	314	412	563	460	518	816	624	1,550	550	1,204
Drainage	65	42	17	21	72	19	46	86	49	5,807
Gutters	324	238	221	74	72	44	531	92	170	417
Garbage	15	3	17	44	57	48	40	79	26	1,766
Hog pens	12	8	12	9	15	20	61	58	28	329
Houses, filthy										223
Houses unfit for habita- tion	31	4	21	11	11	51	180	132	27	468
Houses no privy	38	17	34	32	21	35	39	30	51	297
Hydrants	104	67	101	123	156	92	80	120	114	957
Lots, filthy	57	51	116	107	147	192	547	250	194	1,721
Mauure	457	579	629	676	599	523	192	109	236	4,000
Miscellaneous	1,330	1,631	2,792	2,627	2,296	2,484	3,170	4,327	2,619	23,276
Pumps				2	2	1	2	6	4	17
Pipes, water	123	127	84	75	144	209	251	325	319	1,657
Ponds, stagnant	99	46	90	70	116	220	143	48	17	849
Privies, filthy	5,047	5,907	6,227	5,444	4,904	3,252	2,934	2,264	5,201	41,180
Privies, full	5,407	5,830	6,148	5,316	4,739	3,176	3,289	2,233	4,372	40,510
Privies, leaky boxes	850	675	661	800	547	465	348	247	746	5,339
Privies, dilapidated	63	58	87	55	30	62	145	63	230	793
Roofs, leaky	9	3	9	38	12	17	37	85	21	231
Sewers	475	625	608	604	715	792	734	848	558	6,019
Sewers, house connec- tion	46	51	172	119	105	72	188	549	375	1,677
Slaughterhouses	9			5	7	9	2	7	5	44
Stables	149	184	148	282	221	221	151	256	223	1,835
Streets, filthy	2	2	1	12	3	7	30	17	33	107
Traps, sewer	69	66	67	49	58	75	37	113	223	757
Yards	1,710	1,726	1,826	1,786	1,637	1,931	2,816	3,333	2,240	19,005
Yards, cow	13	14	116	14	5	19	9	1	31	222
Vaults, privy	15	12	7	6	5	23	10	1	2	81
Water-closets	428	428	610	522	693	747	707	717	1,069	5,981
Total	17,518	19,092	21,813	19,802	18,304	16,905	19,429	20,230	21,423	174,516

Before attempting an analysis of these tables it should be understood that each violation of each law is counted as a single nuisance. For instance, a single privy found to be filthy, full, and leaky is counted as three nuisances, being in violation of three distinct sections of the health ordinances. Without discussing the advantages or disadvantages of such a system of enumeration, I would state that it has been in use for some time, and that it is important therefore that it be continued, so that comparison can be made between the work of different years.

The entire number of nuisances inspected during the year was 21,423, an increase of 1,193 over the year previous. The principal ones were as follows: Privies full, filthy, leaky, unlawfully located, etc., 10,909, an increase of 6,102; filthy yards, 2,240, a decrease of 1,093; defective sewers, public and private, 933, a decrease of 464; defective surface drainage, 550, a decrease of 1,000; filthy and unwholesome stables, 223, a decrease of 33; and hogpens, 26, a decrease of 53. Alleys were reported as filthy in 424 instances, an increase of 203 over last year.

A detailed statement of condemnations of food during the past year and the nine years preceding is shown in Tables J, K, and L (pp. 18, 19, 20). The following are the principle items: 43,054 pounds of meat, 3,683 parcels of game, 1,724 domestic fowls, 2,955 parcels of fruit and vegetables, 11,215 bunches of fish, 1,397 bushels of oysters, 72,300 clams, and 194,570 crabs.

The discovery of the nuisances and the condemnations of food, detailed in the tables referred to, resulted during the year in the reference of 305 cases to the attorney for the District for prosecution in the police court. Since March 18 an accurate record has been kept to show the

character of such cases and their results and is shown in the following table:

TABLE T.—Cases referred to the police court, March 18 to June 30, 1895.

Disposition.	Nature of nuisances.								
	Privy.	Water-closet.	Sewer.	Manure.	Defective drainage.	Slaughter-house.	Stables.	Yards.	Storing of bones.
Cases convicted and fined.....	11	.....	.....	1	2	.....	.....	3	.....
Cases convicted and fined, sentence suspended.....	2	.....	1	.....	.....	.....	1	.....	.....
Personal bonds taken.....	49	3	3	.....	1	.....	4	7	1
Cases nolle prossed.....	38	10	10	3	1	1	3	7	.....
Cases dismissed.....	6	.....	.....	.....	.....	.....	2	1	.....
Total.....	106	13	14	4	4	1	10	18	1

Total convicted and fined.....	18
Total convicted and fined, sentence suspended.....	4
Total convicted and personal bonds taken.....	68
Total nolle prossed (abated after issue of warrant).....	73
Total dismissed.....	9
Total police could not find.....	3
Total abated before warrant sworn to.....	14

Total referred from March 18, 1895, to June 30, 1895..... 189

The physicians to the poor treated 15,150 pauper patients, of which 6,186 were white and the remainder, 8,964, colored. The medicine furnished in the cases herein referred to cost \$3,347.10.

The total number of burial permits issued was 6,379, disinterment permits, 644, and orders for burial at public expense, 777.

There were 212 cases referred for investigation to the coroner or physicians to the poor, 300 to the medical sanitary inspector, and 323 to the chemist.

One thousand and ninety-nine searches were made and transcripts furnished applicants from the records of births, marriages, and deaths.

Ninety-five permits were issued to obstruct travel on streets on account of serious illness.

There were impounded 3,743 animals, of which 3,601 were dogs.

The contractor for the collection and removal of garbage and dead animals reports having collected 23,227½ tons of garbage and 7,512 dead animals. There were collected and disposed of 9,720 barrels of night soil.

MEDICAL PRACTICE.

It is a remarkable fact that the District of Columbia, which is under the exclusive jurisdiction of the Congress of the United States, is allowed to remain without a law regulating the practice of medicine, while forty of the States and Territories have enacted restrictive legislation upon the subject. If such laws have been found desirable in other places, there is apparently no reason why they should not be equally desirable here. Indeed, the very fact that they are in force elsewhere renders similar legislation absolutely necessary to protect the citizens of this District from the horde of charlatans and quacks who, driven out of other jurisdictions, have flocked hither to ply their nefarious practices.

The various laws in force in the United States January 1, 1894, may be classified as follows. They remain practically the same at the present time.

"Of the six New England States, Maine, Massachusetts, New Hampshire, and Rhode Island have no legal requirement for the practice of medicine.

"Connecticut has adopted a medical practice act which went into effect October 1, 1893, and in Vermont the law requires the registry of a diploma indorsed by a board of medical censors or of a certificate of satisfactory examination by one of these boards.

"Exclusive of the four States first named, the other States and Territories may be roughly grouped into the following three classes:

"In Alabama, Arkansas, Florida, Maryland, Minnesota, Mississippi, New Jersey, New York (act of May 9, 1893), North Carolina, North Dakota, Pennsylvania (after March 1, 1894), South Dakota, Texas, Utah, Virginia, and Washington the diploma confers no right to practice and has no legal value, except, in some cases, to give its possessor standing before an examining board. The right to practice in each of these sixteen States is determined by individual examination before boards of examiners created by law.

"In California, Colorado, Connecticut (since October, 1893), Delaware, Illinois, Iowa, Kentucky, Louisiana, Missouri, Montana, Nebraska, New Mexico, Oklahoma, Oregon, Tennessee, Vermont, and West Virginia the diploma is subject to the supervision of some designated body vested by law with authority to determine its validity as evidence of its possessor's qualifications for the practice of medicine. Failing the possession of such a recognized diploma, the right to practice may be acquired by passing a satisfactory examination.

"In Arizona, Georgia, Idaho, Indiana, Kansas, Michigan, Nevada, Ohio, South Carolina (since the repeal of the act of 1888), Wisconsin, and Wyoming the presentation of any kind of a diploma—provided only that it be from a chartered medical institution—is the sufficient warrant in law for county clerks, clerks of courts, registrars of deeds, and similarly qualified judges of medical fitness to admit to practice." (Journal of the American Medical Association, March 10, 1894.)

The qualifications necessary to obtain the degree of doctor of medicine are not uniformly fixed by law, but are determined almost if not entirely by the faculty of the college conferring such degree. The college itself may in some places, e. g., the District of Columbia, be lawfully organized and the degree regularly conferred with absolutely no legal requirements as to the number of professors, their ability, or their facilities for teaching the science and art of medicine. There is therefore no reason why the Government should by law place upon a degree of such varying import a fixed value, viz, the unconditional right to practice medicine, and that legislation is best which recognizes this degree only as one of the conditions necessary to entitle an applicant to an examination into his qualifications for practicing medicine.

The laws which may be construed as restricting in any way the practice of medicine and which are at present in force in this District are as follows:

AN ACT to revise, with amendments, "An act to incorporate the Medical Society of the District of Columbia."

SECTION 3. That it shall and may be lawful for the said medical society, —, to elect by ballot five persons, —, whose duty it shall be to grant licenses.

SEC. 5. No person shall be allowed to practice without first having obtained a license testified as by this law directed, or the production of a diploma from a respectable medical college or a board of examiners established by law.

SEC. 7. Nothing in this act contained shall be so construed as to prevent any person living within or without said District from administering medicine or performing any surgical operation, with the consent of the person or the attendants of the

person, —, without fee or reward; nor to prevent the giving advice or assistance to the sick or afflicted upon charity and kindness; nor to prevent the receipt of reward for same, if voluntarily tendered or made; nor to extend to midwifery by females; and any person so administering medicine or performing any surgical operation not authorized to practice physic and surgery according to the provisions of this act shall be prohibited from collecting any fee or reward for the same by any process of law: And be it further provided, that no person shall be admitted to an examination until he shall produce satisfactory evidence that he has studied physic and surgery three years, including one full course of medical lectures as usually taught in medical schools, or four years without such a course of lectures.

Approved July 7, 1838.

AN ACT to incorporate the Washington Homeopathic Medical Society.

SECTION 4. And be it further enacted, that the members of said society, or such of their members as they shall appoint, shall have full power and authority to examine all candidates for membership concerning the practice of specific medicine and surgery, provided said candidates shall sustain a good moral character and shall present letters testimonial of their qualifications from some legally authorized medical institution; and if upon such examination the same candidates, without exception on account of color, shall be found qualified for the practice of medicine and surgery, they shall receive the certificate of membership, or the license to practice medicine and surgery within the District of Columbia.

Approved April 22, 1870.

AN ACT to incorporate the Eclectic Medical Society of the District of Columbia.

SECTION 4. That the said Eclectic Medical Society of the District of Columbia is hereby endowed with all the rights, privileges, and immunities that appertain to other medical societies of the District of Columbia.

Approved February 18, 1893.

AN ACT to further define and enlarge the powers and duties of the board of health of the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be the duty of the board of health of the District of Columbia to make and enforce regulations to secure a full and correct record of vital statistics, including the registration of deaths and the interment of the dead in said District.

Approved June 23, 1874.

REGULATIONS.

Eighth. That it shall be the duty of every physician practicing medicine within the District of Columbia to register his or her name in a book or books to be provided for such purpose at the office of the board of health of said District, giving full name, residence, and place of business, and in case of removal from one place to another in said District, to make change in said register accordingly.

Ninth. That any person who shall violate or aid and abet in violating any of the provisions of the foregoing regulations shall, upon conviction thereof by a competent judicial authority, be punished by a fine of not less than twenty-five nor more than two hundred dollars for each and every offense.

BOARD OF HEALTH, DISTRICT OF COLUMBIA,
Washington, D. C., August 28, 1874.

It is hereby ordered that physicians required to register their names under the eighth regulation of the board, to secure a full and correct record of vital statistics, do so upon a license received from some chartered medical society, or upon a diploma received from some medical school or institution.

Section 5 of the act to revise, with amendments, "An act to incorporate the Medical Society of the District of Columbia" loses whatever value it might otherwise possess by the absence of any penalty for its violation. And it is well known that irregular practitioners are usually careful to collect in advance a fee sufficient to render it unnecessary for them to resort to the law to secure additional remuneration, the prohibition (section 7) from collecting by law any fee or reward for

services being so rendered of practically no effect. This District has therefore no law which prevents anyone from practicing medicine therein.

The bill submitted by you to Congress during the last session was as follows:

A BILL To regulate the practice of medicine and surgery, to license physicians and surgeons, and to punish persons violating the provisions thereof in the District of Columbia.

Whereas because of the absence of a law to ascertain the qualifications of individuals desiring to practice medicine and surgery in the District of Columbia it is made a resort for persons who are excluded from the practice of medicine and surgery in other States by laws in said States requiring evidence of such qualifications:

Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be, and is hereby, created a board of medical supervisors of the District of Columbia, which shall consist of the presidents of the three boards of medical examiners hereinafter provided for and two members to be appointed by the Commissioners of the District of Columbia, each for a period of three years, or until his successor is appointed: *Provided*, That said Commissioners may remove any member of said board for neglect of duty or other just cause.

SEC. 2. That the said board of medical supervisors shall elect a president and secretary, who shall also act as treasurer and shall give such bond as may be required by the Commissioners of the District of Columbia. Said board shall make, subject to the approval of the Commissioners of the District of Columbia, such regulations as may be necessary to carry into effect the provisions of this act. Said board shall hold such meetings as may be necessary for the transaction of business. Said board shall supervise all examinations provided for in this act, and shall issue all licenses to practice medicine or midwifery in the District of Columbia. Said board shall keep an official record of its meetings, also an official register of all applicants for examination for a license to practice medicine and surgery in the District of Columbia. Said register shall show the name, age, and place and duration of residence of each candidate, the time he or she has spent in medical study, in or out of medical schools, and the names and locations of all medical schools which have granted said applicant any degree or certificate of attendance upon lectures in medicine. Said register shall also show whether said applicant was rejected or licensed under this act. Said register shall be prima facie evidence of all matters contained therein. The secretary of said board shall have the power to administer oaths upon such matters as pertain to the business thereof. It shall be the duty of the secretary of said board to mail to the address of each applicant a notice of the time and place of examination not less than seven days before the examination, and at a longer period if requested by the applicant at the time of making application.

SEC. 3. That from and after the passage of this act all persons desiring to practice medicine and surgery in any of their branches in the District of Columbia shall apply to the said board of medical supervisors for a license to do so. Applicants shall submit to examination upon the following-named branches, to wit: Anatomy, physiology, chemistry, pathology, materia medica and therapeutics, hygiene, histology, practice of medicine, surgery, obstetrics, and gynecology, diseases of the eye and the ear, medical jurisprudence, and such other branches as said board shall deem advisable. Each applicant shall be certified by said board for examination as speedily as possible to the board of medical examiners whose members are adherents to the system of medicine which said applicant desires to practice; but said board shall not certify for examination any applicant until satisfactory proof is furnished that he is of good moral character and over twenty-one years of age; nor until he has presented a diploma conferring upon him the degree of doctor of medicine, issued by some medical college authorized by law to confer such degree: *Provided*, That said diploma, if issued prior to July first, eighteen hundred and ninety-seven, shall be accompanied by satisfactory evidence that said applicant has studied medicine and surgery for not less than three years prior to the issue thereof, and if issued subsequent to June thirtieth, eighteen hundred and ninety-seven, shall be accompanied by satisfactory evidence that the applicant has studied medicine and surgery for not less than four years prior to the issue of said diploma. All examinations shall be both theoretical and practical, and of sufficient severity to test a candidate's fitness to practice medicine and surgery. Any applicant intending to practice in the District of Columbia any system of medicine or treatment other than the regular or homeopathic or electric system, and stating such intention in his application, shall be exempt from such part of any examinations to which he may be subjected as relates exclusively to the treatment of disease, but such applicant shall submit in all other branches to the same examinations as are required of other applicants, and shall be examined by such board of examiners as may be designated by the board of

medical supervisors: *Provided*, That any person who may avail himself of the exemption allowed by this clause, and who receives a license under this act, shall cause at all times to be plainly affixed to any sign or signs he may erect or cause to be erected, and to any prescription blanks, billheads, and other like articles he may use in his professional work, and to be inserted in any advertisement he may cause to be displayed, the designation of the system of medicine or treatment employed by him for the cure or relief of disease.

SEC. 4. That said application for a license to practice medicine and surgery in the District of Columbia shall be made to the secretary of said board of medical supervisors upon a form prescribed by said board, and shall be accompanied by a fee of twenty dollars. Each application shall be in the hands of the secretary of said board not less than two weeks before the day set for examination, and any application may be rejected for refusal to furnish any of the information called for or for other irregularity. All applications shall be kept on file by the secretary of the board.

SEC. 5. That immediately after the passage of this act the Commissioners of the District of Columbia shall appoint three boards of medical examiners, one to be known as the board of medical examiners of the District of Columbia, and to be composed of five physicians in good standing, adherents to the regular system of medical practice; one to be known as the board of homeopathic medical examiners of the District of Columbia, and to be composed of five physicians in good standing, adherents to the homeopathic system of medical practice, and one to be known as the board of eclectic medical examiners of the District of Columbia, to be composed of five physicians in good standing, adherents to the eclectic system of medical practice. Of the members of each board first appointed, one shall be appointed to serve one year, two to serve two years, and two to serve three years, and thereafter each member of each board shall be appointed to serve three years, or until his successor is appointed: *Provided*, That no member of said boards shall have engaged in the practice of medicine and surgery in the District of Columbia for less than five years at the time of his appointment: *And provided further*, That the Commissioners of the District of Columbia may at any time remove any member of said boards for neglect of duty or other just cause, and that in case of the death, resignation, or removal of any member, the vacancy for the unexpired term of said member shall be filled in the same manner as other appointments are made.

SEC. 6. That each member of said boards of medical examiners of the District of Columbia shall, before entering upon the discharge of his duties, take an oath to administer fairly and impartially the provisions of this act. Each board shall elect from its own members a president and secretary. Each board shall hold a meeting for examination in the city of Washington on the second Thursday in January, April, July, and October of each year, and continuing so long as may be necessary to examine all applicants, and at such other times as the board of medical supervisors shall direct. Each of said boards of medical examiners shall examine, at the examination immediately following the receipt of the proper certificates from the board of medical supervisors, all applicants for licenses to practice medicine and surgery in the District of Columbia so certified.

SEC. 7. That the several boards of medical examiners shall, not less than one week prior to each examination, submit to the board of medical supervisors of the District of Columbia questions for thorough examinations in anatomy, physiology, chemistry, pathology, materia medica and therapeutics, hygiene, histology, practice of medicine, surgery, obstetrics, and gynecology, diseases of the eye and the ear, medical jurisprudence, and such other branches as said board of medical supervisors may direct. From the lists of questions so submitted, said board of medical supervisors shall select the questions for each examination, and such questions shall be the same for all candidates, except that in the department of therapeutics, practice of medicine, and materia medica the questions shall be in harmony with the system of medicine selected by the candidate. Said examinations shall be conducted orally and in writing, in accordance with the rules and regulations prescribed by the board of medical supervisors, and shall embrace the subjects in section three of this act. An official report of the result of each examination, signed by the president and secretary and each acting member of said board of medical examiners, stating the examination and average of each candidate in each branch, the general average, and the result of the examination, whether successful or unsuccessful, shall be transmitted to the board of medical supervisors within fifteen days from the date of such examination. Said report shall embrace all the examination papers, questions, and answers thereto. All such examination papers shall be kept for reference and inspection for a period of not less than five years.

SEC. 8. That if in the opinion of a majority of the board of medical supervisors, after a careful examination of the report of the board of medical examiners by which any applicant was examined, said applicant has fairly passed such examination as hereinbefore provided for, the board of medical supervisors of the District of Columbia shall, as soon thereafter as possible, issue to him a license signed by the president and secretary of said board and attested by the seal of the District of Colum-

bia, which license shall entitle said applicant, after it is registered, as hereinafter provided, to practice medicine and surgery in the District of Columbia: *Provided*, That a license shall be issued upon application, free of cost and without examination, to each physician, a graduate of any medical college in good standing, who is registered at the health office of the District of Columbia at the time of the passage of this act: *And provided further*, That a license may be issued, under such regulations as the board of medical supervisors of the District of Columbia, with the approval of the Board of Commissioners of said District, shall make, to any physician holding a license from any State board of medical examiners established by law which has required, before the issue of said license, qualifications and examinations equivalent to those required by this act for the issue of similar license. All licenses issued by said board shall be numbered consecutively, and a register shall be kept by the secretary showing the number of each license, the date of issue, and to whom issued.

SEC. 9. That the board of medical supervisors of the District of Columbia shall make, subject to the approval of the Commissioners of said District, such regulations as may be necessary to determine the qualifications of women desiring hereafter to commence the practice of midwifery in the District of Columbia, and shall issue licenses to such as are, after examination, found qualified; but no fees shall be charged for the examination of any applicant for such licenses, and no applicant who has been rejected shall be reexamined within one year from such rejection: *Provided*, That a license shall be issued upon application, free of cost and without examination, to each midwife registered at the health office of the District of Columbia at the time of the passage of this act.

SEC. 10. That the board of medical supervisors of the District of Columbia may, by a vote of four members, refuse to grant or may revoke a license, or may cause the name of any person to be removed from the record of the supreme court of the District of Columbia and from the register of the health office, for the following causes, to wit: The employment of fraud or deception in passing the examinations provided for in this act, chronic and persistent inebriety, the practice of criminal abortion, or conviction of crime involving moral turpitude. In complaints under this section the accused shall be furnished with a copy of the complaint and given a hearing before said board in person or by attorney. Said board shall have the power to compel the attendance of witnesses by subpoenas. Appeal from the decision of said board may be taken to the Board of Commissioners of the District of Columbia, and its decision shall be final. Said board may at any time within two years from the refusal or revocation of a license, or the cancellation of registration under this section, by a unanimous vote, issue, without examination, a new license to the person so affected, restoring to him all the rights and privileges of which he or she had been deprived by said board.

SEC. 11. That any person receiving a license as hereinbefore provided shall have it recorded in the office of the clerk of the supreme court of the District of Columbia within three months from the date of said license, and the place and date of record shall be certified thereon by said clerk; and the holder of the license shall pay to the recording clerk a fee of fifty cents for making the record. The holder of said license shall, after the same has been recorded, exhibit the same at the health office and register in a book, provided for that purpose, his or her name and address. Whenever a license is revoked by said board of medical supervisors, the secretary thereof shall report that fact in writing to the clerk of said court and to the health officer of the District of Columbia, who shall thereupon cancel such registration.

SEC. 12. That this act shall not apply to commissioned surgeons of the United States Army, Navy, or Marine-Hospital Service, nor to regularly licensed physicians and surgeons in actual consultation from other States or Territories, nor to regularly licensed physicians and surgeons actually called from other States or Territories to attend specified cases in the District of Columbia, nor to dentists in the legitimate exercise of their profession, nor to the treatment of any case of actual emergency, nor to the use of ordinary domestic remedies without any fee, gift, or consideration of any kind being given in turn therefor.

SEC. 13. That any person shall be regarded as practicing medicine and surgery within the meaning of this act who shall append the letters M. D. or M. B. to his or her name, or who shall prescribe, advise, or apply for the use of any person or persons any drug or medicine, or other agency, or who shall perform any operation for the treatment, cure, or relief of any bodily injury, infirmity, or disease, or who shall publicly profess to do any of these things.

SEC. 14. That from and after the passage of this act any person practicing medicine and surgery or midwifery in the District of Columbia without first having obtained a license to do so, and registered the same as herein provided, or in violation of any of the provisions of this act, or any of the rules and regulations made by authority conferred herein, or after his license or registration, or both, has been canceled by order of the board of medical supervisors of the District of Columbia, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be pun-

ished for each offense by a fine of not less than fifty nor more than five hundred dollars, or by imprisonment in the District jail for a period of not less than ten nor more than ninety days, or by both such fine and imprisonment. It shall be the duty of the United States district attorney for the District of Columbia to prosecute all violations of the provisions of this act.

SEC. 15. That the secretary of the board of medical supervisors shall be paid for taking testimony the same fee that is allowed to an examiner in chancery for the same service. The expense of said board and of the examinations shall be paid from the license fees herein provided for; and if any surplus remain on the thirtieth day of June of each year the members of the board of medical supervisors appointed as such shall be paid such reasonable compensation as said board may determine, and any balance then remaining shall be divided among the three boards of medical examiners in proportion to the number of candidates examined, each member of each board of medical examiners to receive such part of the entire amount paid as that board itself shall determine.

SEC. 16. That all acts or parts of acts, general or special, now existing not in accordance with the provisions of this act, or inconsistent therewith, be, and are hereby, repealed.

This law failed to receive the support of the various incorporated medical societies for the following reasons:

The Eclectic Medical Society claimed that it was not necessary to have any law upon the subject, but suggested stringent laws relating to malpractice as a substitute.

The Washington Homeopathic Medical Society claimed that the proposed law did not secure to them a fair representation on the board of medical supervisors, and was not willing that the board of homeopathic medical examiners should be in any way subordinate to the board of medical supervisors as constituted.

Both the Washington Homeopathic Medical Society and the Medical Society of the District of Columbia objected to the omission of a clause prohibiting advertising and to the following:

Any applicant intending to practice in the District of Columbia any system of medicine or treatment other than the regular or homeopathic or eclectic system, and stating such intention in his application, shall be exempt from such part of any examination to which he may be subjected as relates exclusively to the treatment of disease, but such applicant shall submit in all other branches to the same examinations as are required of other applicants.

It will evidently be impossible to frame a law which will be effectual and meet with no objection, but it is to be hoped that the public will soon learn that some legislation of this kind is necessary for its own protection and will insist upon its passage without regard to the non-essential points of difference between medical societies. Until the possession of a certificate from a Government examining board, granted after an examination by that board, is a qualification necessary to lawfully practice medicine, so long will the citizens individually be the prey of quacks and charlatans, and so long will the community be exposed to outbreaks of typhoid fever, scarlet fever, diphtheria, small-pox, and possibly cholera and yellow fever, due to the errors of diagnosis and treatment of these impostors.

I respectfully recommend that an earnest effort be made by the Commissioners to secure the passage of a law regulating the practice of medicine in this District.

In this connection I beg to call attention to the entire absence of any law governing medical colleges. Such a college may be lawfully organized by any five men, irrespective of their education and facilities for giving instruction. The degree of doctor of medicine may be lawfully conferred by them after one year, one month, or one day's instruction. The condition is one meriting your earnest consideration and vigorous effort to secure the proper remedy. A bill for this purpose which was

introduced into Congress at the last session was favorably reported upon by this department.

LEGISLATION.

The sanitary laws of this District should be revised, codified, and printed, so as to be put into the hands of every citizen in a form easily understood and convenient for reference.

The ordinances of the late board of health, under which the principal work of this department has been done since its organization in 1878, having been declared by the court invalid, the following was enacted by the Fifty-third Congress, second session:

That the ordinances of the late board of health of the District of Columbia, as legalized by joint resolution of Congress, approved April twenty-fourth, eighteen hundred and eighty, be, and the same are hereby, declared to have the same force and effect within the District of Columbia as if enacted by Congress in the first instance, and that the powers and duties imposed upon the late board of health, in and by the said ordinances, are hereby conferred upon the health officer of said District, and that all prosecutions for violations of said ordinances and regulations shall be in the police court of the District of Columbia in the name of the said District: *Provided*, That said regulations shall not be enforced against established industries which are not a nuisance in fact.

Approved August 7, 1894.

The following was enacted by the Fifty-third Congress, third session:

and said Commissioners are hereby authorized to make necessary regulations for the collection and disposition of garbage in the District of Columbia and to annex to said regulations such penalties as will secure the enforcement thereof.

That hereafter no other building for use as a public or private hospital for contagious diseases shall be erected in the District of Columbia within three hundred feet of any building owned by a private individual or any other party than the one erecting the building. All private hospitals in the District of Columbia shall be required to secure a permit from the Commissioners of the District of Columbia, and said hospitals shall be at all times subject to inspection by the health officer of said District, or his deputy, and any person or persons refusing to permit such inspection shall each be subject to a fine of not less than fifty dollars nor more than two hundred dollars for each of such refusals.

Approved March 2, 1895.

The regulations made by authority of the first paragraph are printed in full on page 22 with the report on garbage.

The paragraph referring to hospitals is defective in that no penalty is provided for maintaining a private hospital without a permit. The law should specify also, or authorize the Commissioners to specify, the conditions to which a hospital must conform in order to obtain and hold a license. It is desirable that the amendments to the law necessary to make it effective be secured, as the object sought to be obtained is a most important one.

The law to regulate the sale of milk passed at the last session of Congress is as follows:

AN ACT to regulate the sale of milk in the District of Columbia, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act no person shall within the District of Columbia keep or maintain a dairy or dairy farm without a permit so to do from the health officer of said District. Application for said permit shall be made in writing, upon a form prescribed by said health officer: *Provided*, That no applicant for said permit shall be restrained from conducting business until said application has been acted upon by the health officer of the District of Columbia or his duly appointed agent. It shall be the duty of said health officer, upon receipt of said application in due form, to make or cause to be made an examination of the premises which it is intended to use in the maintenance of said dairy or dairy farm. If after such examination said premises are found to conform to the regulations governing dairies and dairy farms within the District of Columbia, said health officer

shall issue the permit hereinbefore specified, without charge: *Provided*, That said permit may be suspended or revoked at any time, without notice, by said health officer whenever the milk supply from said dairy or dairy farm is exposed to infection by Asiatic cholera, anthrax, diphtheria, erysipelas, scarlet fever, smallpox, splenic fever, tuberculosis, typhoid fever, typhus fever, or yellow fever so as to render its distribution dangerous to public health.

SEC. 2. That no person shall bring or send into the District of Columbia for sale any milk without a permit so to do from the health officer of said District. Application for said permit shall be made in writing, upon a form prescribed by said health officer, and shall be accompanied by such detailed description of the dairy farm or dairy where said milk is produced or stored as said health officer may require and by a sworn statement as to the physical condition of the cattle supplying said milk: *Provided*, That no applicant for said permit shall be restrained from conducting business until said application has been acted upon by the health officer of the District of Columbia or his duly appointed agent. If after examination of said application said health officer is satisfied that said milk will be brought into the District of Columbia for sale or consumption without danger to public health, he shall issue, without charge to the applicant, a permit so to do, on condition that none but pure and unadulterated milk shall be, with knowledge of its impurity, brought into said District; that in the management of said dairy or dairy farm said applicant shall be governed by the regulations of the health officer of the District of Columbia, approved by the Commissioners of the District of Columbia, issued for dairies and dairy farms in said district, when said regulations do not conflict with the law of the State in which said dairy or dairy farm is located, and that said dairy or dairy farm may be inspected at any time without notice by the health officer of the District of Columbia or his duly appointed representative: *Provided*, That said permit may be suspended or revoked at any time without notice by said health officer whenever the milk supply from said dairy or dairy farm is exposed to infection by Asiatic cholera, anthrax, diphtheria, erysipelas, scarlet fever, smallpox, splenic fever, tuberculosis, typhoid fever, typhus fever, or yellow fever so as to render its distribution dangerous to public health.

SEC. 3. That no person suffering from or who has knowingly, within a period specified by the health officer of the District of Columbia, been exposed to diphtheria, scarlet fever, erysipelas, smallpox, anthrax, or other dangerous contagious disease shall work or assist in or about any dairy or dairy farm; no proprietor, manager, or superintendent of any dairy or dairy farm within the District of Columbia shall knowingly permit any person suffering, or exposed as aforesaid, to work or assist in or about said dairy or dairy farm.

SEC. 4. That all milk wagons shall have the name of the owner, the number of permit, and the location of dairy from which said wagons haul milk painted thereon plainly and legibly.

SEC. 5. That all grocers, bakers, and other persons having or offering for sale milk shall at all times keep the name or names of the dairymen from whom the milk on sale shall have been obtained posted up in a conspicuous place wherever such milk may be sold or kept for sale.

SEC. 6. That no person shall offer or have for sale in the District of Columbia any unwholesome, watered, or adulterated milk, or milk known as swill milk, or milk from cows that are fed on swill, garbage, or other like substance, nor any butter or cheese made from any such milk.

SEC. 7. That no person shall knowingly offer or have for sale any milk containing more than eighty-eight per cent of watery fluid and less than twelve per cent of total milk solids, of which at least three per cent shall be of fat.

SEC. 8. That no person shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange, or deliver, skimmed milk containing less than nine and three-tenths per cent of milk solids, inclusive of fat.

SEC. 9. That no dealer in milk, and no servant or agent of such a dealer, shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange, or deliver, milk from which the cream, or any part thereof, has been removed, unless in a conspicuous place, above the center or upon the outside of every vessel, can, or package thereof, in which milk is sold, the words "skimmed milk" are distinctly marked in gothic letters, not less than one inch in length.

SEC. 10. That it shall not be lawful for any person or persons to sell or offer for sale within the District of Columbia milk taken from any cow less than fifteen days before or ten days after parturition, or from any cow which is known to be suffering from tuberculosis, splenic fever, anthrax, or any general or local disease which is liable to render the milk from said cow unwholesome.

SEC. 11. That it shall be the duty of the health officer of the District of Columbia, under direction of the Commissioners of said District, to make and enforce regulations to secure proper water supply, drainage, ventilation, air space, floor space, and cleaning of all dairies and dairy farms within said District; to secure the isola-

tion of cattle suffering from any contagious disease, and to carry into effect the provisions of this act.

SEC. 12. That the health officer of the District of Columbia, or his duly appointed assistants, shall have the right to enter without previous notice, for the purpose of inspection, any dairy or dairy farm within said District.

SEC. 13. That in all cases of sampling in the District of Columbia milk taken for analysis shall be taken, examined, and analyzed in the presence of at least two witnesses, one of whom may be the owner of the milk or his agent; and in all cases such sampling shall be made according to the Babcock method, to wit, dumping the milk from one can to another not less than twice before sampling.

SEC. 14. That prosecutions under this act shall be in the police court of said District, on information signed by the attorney of the District or one of his assistants, and any person or persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished for the first offense by a fine of not less than five dollars not more than twenty-five dollars, to be collected as other fines and penalties, or by imprisonment in the workhouse for a period of not more than thirty days, and for the second offense and each subsequent offense by a fine of not less than fifty dollars nor more than one hundred dollars, or by imprisonment in the workhouse for ninety days, or by both such fine and imprisonment, in the discretion of the court, and if the person so convicted of a second or subsequent offense hold a permit under this act the same shall be canceled and no permit shall be issued to said person for a period of six months: *Provided*, That any person or persons under this act shall have the privilege, when demanded, of a trial by jury as in other jury cases in the police court.

SEC. 15. That all laws and parts of laws inconsistent with the foregoing be, and the same are hereby, repealed.

Approved March 2, 1895.

It is a matter of regret that the original draft of this law was so mutilated in its passage through the Senate. Section 13 will necessitate the employment of three persons to collect and analyze each sample of milk, and thus interfere with the general work of this department without benefit to anyone. Amendments to correct this and other defects will be submitted later for your consideration.

The following regulations are those promulgated by you by virtue of an act of the legislative assembly for the prevention of diseases in the District of Columbia, approved June 19, 1872, and of joint resolution of Congress of February 26, 1892:

REGULATIONS TO PREVENT THE SPREAD OF SMALLPOX IN THE DISTRICT OF COLUMBIA.

SECTION 1. That it shall be the duty of every physician or other person in charge of any patient who may be reasonably suspected of being affected by smallpox to report to the health officer in writing within twelve hours from the time of discovery of the existence or probable existence of such disease the full name and address and place of business or school attended by such person, with names and addresses of such persons as have been exposed to the disease from such case, together with the probable source of contagion.

In any case, upon the death or complete recovery of any person who has had smallpox, it shall be the duty of the physician or person in charge of such case to report in writing such fact to the health officer.

SEC. 2. A placard, flag, or warning sign shall remain displayed upon the front of any premises deemed by the health officer to be infected by smallpox until removed by order of said health officer; and no person shall remove, without permission of the health officer, such placard, flag, or warning sign.

SEC. 3. No person except the physician or the nurse or nurses in attendance shall be admitted to the room in which is a patient suffering with smallpox; and no person shall enter the house except members of the family already dwelling therein, or other people necessarily there employed.

SEC. 4. Persons who have been exposed to the infection of smallpox shall remain under daily observation of the health officer or his duly authorized agent for such a period of time as may be necessary to demonstrate their freedom from the disease, and shall not attend any place of public or private assemblage during such period. No person suffering from smallpox shall wilfully expose himself in any public or exposed place, but shall remain isolated until no longer capable of transmitting the disease to others.

SEC. 5. The apartments and contents thereof occupied by any person suffering from smallpox, and adjoining apartments and contents thereof, when such apart

ments are deemed infected, shall be properly disinfected before such apartments shall be occupied by any other person or before such articles contained therein shall be removed.

SEC. 6. The body of a person dead from smallpox shall at once be completely enveloped by the person in charge of such patient in a sheet wetted with a 1 to 500 solution of bichloride of mercury, and shall then be placed by such person in a coffin which shall be immediately closed, and such body shall not be taken to any church or place of assembly, and it shall be buried privately within 24 hours.

The body of any person dead with smallpox shall not be removed into or out of the District of Columbia.

SEC. 7. Any person in charge of any premises wherein a case of smallpox has occurred shall adopt such measures of disinfection as may be directed by the health officer.

No person shall cause to appear in any public or exposed place any article which has been exposed to infection of smallpox and which has not been properly disinfected since such exposure.

SEC. 8. Whenever smallpox shall have been declared by the health officer of the District of Columbia to be epidemic therein, no person having charge of any building or place wherein people assemble shall admit thereto for such period as may be designated by the health officer any person who has not been protected from smallpox by a successful vaccination within the five years immediately preceding, or by a previous attack of smallpox.

SEC. 9. Whenever the health officer shall deem any building or place where people assemble to be especially exposed to danger of infection by smallpox and shall have so notified the owner or person in charge of such building or place, no such owner or person shall admit to any such building or place for such period as may be designated by the health officer any person who has not been protected from smallpox by a successful vaccination within the five years immediately preceding, or by a previous attack of smallpox.

SEC. 10. No person shall interfere with or obstruct the entrance or inspection of any building by the officers of the health department, when there has been reported the case of a person ill with smallpox therein; nor shall any person in any manner hinder or prevent such disinfection or destruction of infected articles as may be, in the opinion of the health officer, necessary to prevent the spread of this disease.

SEC. 11. Nothing in these regulations shall be construed to interfere with any physician, nurse, clergyman, or officer of the health department in the discharge of duty.

SEC. 12. Any person found guilty of the violation of any of the foregoing regulations shall be punished for each offence by a fine not to exceed \$50, or by imprisonment in the District Jail not to exceed thirty days, or by both such fine and imprisonment in the discretion of the court.

SEC. 13. That the aforesaid regulations shall apply to all cases of smallpox, varioloid, or suspicious cases of disease not distinguishable from the aforesaid diseases: *Provided*, That the flag or warning placard shall be displayed only upon such premises as are known to be infected with smallpox or varioloid.

It is desirable that the powers of the Commissioners and of the health officer in reference to the management of the more dangerous contagious diseases be greatly broadened. The safety of the community should, in the presence of such diseases, be entirely superior to the rights of the individual. Less interference with such rights will result in the end from the autocratic management of an epidemic and its consequent prompt suppression than from the mild administration of sanitary measures and the continual presence of the disease.

It is not possible to go at length into the changes needed in the present sanitary laws of this District, but the following are, in addition to those already mentioned, some of the most important:

- A law defining the liability of owners, agents, and occupants of premises for nuisances existing thereon.
- A law regulating the practice of medicine.
- A law governing medical colleges.
- A law governing the sanitary condition of dwelling houses, stores, etc.
- A law governing the sanitary condition of bakeries and laundries.
- A law requiring the abolition of privies and surface drainage and the establishment of sewer connections wherever sewers are available.

A law requiring cases of typhoid fever to be reported to the health officer.

A law regulating cemeteries.

Amendments to the act to prevent the spread of scarlet fever and diphtheria; the act to regulate the sale of milk, etc.; the regulations with regard to vital statistics, and various others.

It is remarkable that in this District, while stables must by law be kept clean, tenement houses and bakeries need not, and that a cemetery may be established anywhere without restriction.

I desire before closing this report to invite your attention to the urgent necessity for the abatement of certain nuisances for which the Government alone is responsible, viz: the unsanitary condition resulting from the James Creek Canal, Rock Creek below P street, and the Eastern Branch Flats.

ESTIMATES.

The following estimates for the ensuing year are respectfully submitted:

One health officer	\$3, 000
One chief inspector, who shall be a physician and act as deputy health officer.	1, 800
Fifteen sanitary and food inspectors, \$1,200 each	18, 000
One sanitary and food inspector, who shall be a practical chemist and inspect dairy products.....	1, 800
One sanitary and food inspector to assist chemist, etc.....	600
Two sanitary and food inspectors, who shall be veterinary surgeons and act as inspectors of live stock, dairy farms, etc., \$1,200 each	2, 400
One inspector of marine products.....	1, 200
One chief clerk and deputy health officer.....	1, 800
One clerk.....	1, 400
Four clerks, two of whom may also act as sanitary and food inspectors, \$1,200 each.....	4, 800
One clerk.....	1, 000
One messenger and janitor.....	600
One pound master.....	1, 200
Laborers, at not exceeding \$40 per month.....	1, 920
Ambulance driver.....	480
Rent of office and stable.....	1, 120
For support of chemical laboratory.....	1, 000
For the collection and disposal of garbage and dead animals.....	57, 000
For the prevention of the spread of scarlet fever, diphtheria, and other minor contagious diseases, including the establishment and maintenance of a bacteriological laboratory and disinfecting service, to be immediately available.....	16, 000
Contingent expenses.....	4, 000
For the relief of the poor:	
Twenty physicians to the poor, at \$480 each per annum.....	9, 600
Drugs, printing, etc.....	3, 700

For the erection of an administration building, isolation ward, stable, mortuary, and discharging room in connection with the smallpox hospital, and for the equipment of these buildings and of those already erected. (Referred to building inspector.)

The following is respectfully submitted for your consideration in connection with the above estimates. Although it can not be expected to secure in one year all the items suggested, an effort should be made to obtain them as rapidly as possible:

To pay physicians to the poor for extraordinary service during the fiscal year 1894-95, viz, performing 11,980 vaccinations.

To employ four vaccine physicians.

For the collection of night soil, ashes, and general refuse.

For the purchase of a site for, erection, and equipment of a stable for the health department, and a pound in connection therewith.

For the purchase of a site for, erection, equipment, and maintenance of a hospital for the treatment of scarlet fever, diphtheria, measles, and erysipelas, to be immediately available.

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For the purchase of a site for, erecting, equipping, and operating two crematories for the cremation of refuse other than garbage, provided that one of said crematories may be located on Reservation 13, if used in connection with an electric-light plant on said reservation.

For erecting, equipping, and operating an electric light plant on Reservation 13, for the use of the smallpox hospital and other institutions on that reservation.

For erecting, equipping, and operating on Reservation 13 a crematory for the incineration of human bodies.

For the purchase of a site for, erecting, equipping, and operating public baths.

For the prevention of the introduction or spread of smallpox, cholera, yellow fever, typhus fever, etc., to be used only in case of emergency.

Respectfully submitted.

WM. C. WOODWARD, M. D.,
Health Officer.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

APPENDICES
TO THE
REPORT
OF THE
HEALTH OFFICER
OF THE
DISTRICT OF COLUMBIA.

TABLE 1.—Showing total number of deaths occurring in the District of Columbia, arranged by classes, orders, sex, color, months, quarters, age, nativity and social relations, with percentages and death rates, for the year ended June 30, 1895.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH RATE.		RECAPITULATION.										1894.									
			Deaths per 1,000 inhabitants.		Total by color and sex.					Total by color.														
			W.	C.	M.	F.	M.	F.	C.	W.	F.	C.	M.	F.			C.	W.	C.	W.	F.	M.	F.	C.
Smallpox.....	9	0.14	0.02	0.03	1	2	4	2	3	6	5	4	4	1	1	1	1	1	1	1	1	1	1	1
Measles.....	10	.18	.05	.01	2	6	1	1	9	1	8	6	8	1	1	1	1	1	1	1	1	1	1	1
Scarlet fever.....	16	.28	.07	.02	6	8	2	14	9	2	8	6	8	1	1	1	1	1	1	1	1	1	1	1
Diphtheria.....	124	2.22	.49	.38	46	45	12	16	91	33	62	61	4	6	5	6	6	4	2	2	2	2	2	2
Croup.....	17	.33	.08	.03	6	8	2	1	13	3	9	9	1	1	1	1	1	1	1	1	1	1	1	1
Whooping cough (pertussis).....	58	1.04	.13	.30	12	11	17	18	23	35	29	29	5	2	6	7	2	3	6	2	2	2	2	2
Typhoid fever.....	187	3.37	.64	.79	62	56	33	36	118	69	95	92	7	11	9	6	11	5	5	9	9	9	9	9
Typho-malarial fever.....	13	.23	.04	.07	4	3	3	7	6	7	6	7	6	1	1	1	1	1	1	1	1	1	1	1
Malaria.....	22	.39	.03	.19	2	4	4	12	6	16	6	16	6	1	1	1	1	1	1	1	1	1	1	1
Intermittent fever.....	9	.16	.03	.04	2	3	2	2	5	4	5	4	1	1	1	1	1	1	1	1	1	1	1	1
Remittent fever.....	20	.36	.06	.12	4	6	9	1	10	10	13	7	1	1	1	1	1	1	1	1	1	1	1	1
Catarrhal influenza (la grippe).....	87	1.57	.31	.34	26	31	12	18	57	30	38	49	1	1	1	1	1	1	1	1	1	1	1	1
Erysipelas.....	14	.25	.06	.02	9	3	1	1	12	2	10	4	1	1	1	1	1	1	1	1	1	1	1	1
Septicæmia.....	8	.14	.03	.02	2	4	1	2	6	2	2	6	2	1	1	1	1	1	1	1	1	1	1	1
Pyæmia.....	5	.09	.01	.04	1	1	1	1	4	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1
Diarrhea.....	55	.99	.09	.46	10	6	18	21	16	39	28	27	1	3	3	8	1	4	2	2	2	2	2	2
Dysentery.....	32	.55	.13	.32	11	13	14	14	24	28	25	27	3	3	3	2	2	4	4	4	4	4	4	4
Enterocolitis.....	61	1.09	.21	.26	19	20	12	10	39	22	31	30	7	8	5	2	1	3	3	3	3	3	3	3
Cholera infantum.....	121	2.17	.31	.74	29	28	30	34	57	64	59	62	10	14	7	14	4	5	6	6	6	6	6	6
Cholera morbus.....	11	.20	.03	.07	3	2	3	3	5	6	6	5	1	1	1	1	1	1	1	1	1	1	1	1
Eczema.....	1	.02	.01	.01	1	1	1	1	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Carbuncle.....	3	.05	.01	.01	2	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Conjunctivitis.....	2	.04	.01	.01	1	1	1	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Athrepsia.....	2	.04	.01	.01	1	1	1	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Total miasmatic.....	907	16.30	2.85	4.40	263	260	186	198	523	384	449	458	37	50	34	45	30	25	37	33	33	33	33	33
Order 2.—Etiologic.																								
Syphilis, congenital.....	17	.30	.03	.15	4	4	9	9	4	13	8	9	1	1	1	1	1	1	1	1	1	1	1	1
tertiary.....	1	.02	.01	.01	1	1	1	1	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
variety not stated.....	3	.05	.01	.01	2	1	1	1	2	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Total etiologic.....	21	.37	.04	.17	6	5	10	6	15	11	10	1	1	1	1	1	1	1	1	1	1	1	1	1

Order 3 - Dietic.

56	1.00	1.1	33	11	14	18	24	32	27	29	2	2	1	1	3	1	1	2	1	1
22	.39	.65	35	6	3	1	6	9	13	17	9	1	1	2	1	1	1	1	1	1
1	.02	.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	.34	.08	14	1	3	1	15	4	17	2	1	2	2	2	2	2	2	2	2	2
1	.02	.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
99	1.77	.27	.58	.33	.16	.25	.25	.49	.50	.58	.41	2	4	5	2	5	1	1	3	3

Order 4.—*Parasitic.*

[illegible]

CLASS II.—CONSTITUTIONAL DISEASES.

Order 1.—*Diathetic.*

[illegible]

Chloris B. — Poetic.

<i>Order 3.—Diet.</i>							
Institution	1	1	6	4	3	3	1
Socialization of food	2			1	4	2	3
Puritanism							1
Alcoholism	1		2	1	2		3
Morphism							1
Total dietetic	1	2	8	7	9	5	10

(Order 4.—*Parasitic.*

[illegible]

CLASS II.—CONSTITUTIONAL DISEASES.

Order 1.—*Diathetic.*

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, c'2.—Continued.

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

AGE OF DECEASED.

Cause of death.	Under 1 year.			1 to 2 years.			2 to 3 years.			3 to 4 years.			4 to 5 years.			Total under 5 years.			Per cent of each cause to total mortality under 5 years of age.		
	M. F.		C.	M. F.		C.	M. F.		C.	M. F.		C.	M. F.		C.	M. F.		C.			
	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.			
CLASS I.—ZYMOTIC DISEASES.																					
Order 1.— <i>Miasmatic</i> .																					
Smallpox.....	1	1															1	1		1	
Measles.....																				3	
Scarlet fever.....				1	3												1	1		3	
Diphtheria.....	2	1		2	2		1	4	6	4	1	11	5	1	1	7	3	2		26	
Croup.....	7	6	7	8	3	3	4	5	1	1	1	2	1	2	2	2	12	11	15	55	
Whooping cough (pertussis).....				1	2		1	2		1	2						3	1	2	5	
Typhoid fever.....																	1	1		2	
Typhoid abdominal fever.....																	1	1		2	
Malaria fevers.....	1	2	2	1	1		1	1		1	1						1	3	2	4	
Intermittent fever.....																				1	
Remittent fever.....	1	5		2	1		1	1		1	1						1	2	6	8	
Catarrhal influenza (la grippe).....	2	1		2	1		2	1	1	1	1						3	2	4	13	
Erysipelas.....	3	2															3	2		5	
Septicæmia.....																	1	1		2	
Pyæmia.....																					
Diarrhea.....	3	2	13	2						12	1						3	3	13	34	
Dysentery.....			4	5	2		1	3	1		1						1	5	8	13	
Eitercædilis.....	13	15	10	8	3	3	1	1		1	1						10	19	11	56	
Cholera infantum.....	25	24	27	34	3	4	3	1		1							27	28	30	34	
Cholera morbus.....			1														1	1		2	
Eczema.....																					
Echinococcus.....																					
Congestive fever.....	1	1															2			2	
Atrepsia.....																	1	1		2	
Total miasmatic.....	62	60	71	59	16	21	17	23	7	14	8	8	15	8	3	4	12	11	5	4	
																	114	104	98	428	
Order 2.— <i>Etiologic</i> .																					
Syphilis, congenital.....	4		2	5													4		5	8	
tertiary.....																					
variety not stated.....																					
Total etiologic.....	4		2	5													4		5	8	
																	4		8	16	
Total ætiologic.....	4		2	5													4		8	16	

Order 3 — Dietic.

[illegible]

Order 1 — Diathetic.

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—(continued).

[illegible]

Order 3.—*Dentic.*

[illegible]

Order 4.—*Parasitic.*

[illegible]

CLASS II.—CONSTITUTIONAL DISEASES.

Order 1.—*Diathetic.*

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	SOCIAL RELATIONS.										NATIVITY.									
	Widow or widower.					Unknown.					District of Columbia.					Other parts of United States.				
	W.		C.		F.	W.		C.		F.	W.		C.		F.	W.		C.		F.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Smallpox.....	1	2				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Measles.....	2	6				2	6	1												
Scarlet fever.....	6	8				4	8	1												
Diphtheria.....	43	43				43	43	14	16	1	2	3								
(Group).....	6	8				12	11	17	18											
Whooping cough (pertussis).....	1	2	3			36	13	19	19	22	32	14	17	4	6					
Dysphoid fever.....	2	1	1			1	1	1	1	1	3	1	2	1	1					
Typhoid fever.....	1	1	1			1	1	1	1	1	2	1	1	1	1					
Maternal fevers.....	2	1	1			1	1	1	1	1	1	1	1	1	1					
Intermittent fever.....	1	2				2	1				1	2	1							
Relapsing fever.....	1	1				1	1	6			2	1	2	1	1					
Cholera.....	9	1	5			9	7	5	5	8	21	6	13	9	3					
Enteric fever.....	1	1	1			1	1			1	2	1	1	1	2					
Typhoid.....	1	1	1			1	1			1	2	1	1	1	2					
Scorbutus.....	1	1				1	1			2	1	3								
Pyæmia.....	1	1				1	1			1										
Diarrhea.....	2	1				3	4	13	15	5	5	1	5	6	2	1				
Dysentery.....	5	3	5			4	6	8	5	5	5	5	6	9	2	2				
Enterocolitis.....	1	1	10			13	20	11	10	4			1							
Cholera infantum.....	1	1				29	28	30	34											
Cholera morbus.....	1	1	1			2		1			2	2	3	1						
Eczema.....																				
Carbuncle.....																				
Conjunctive fever.....						2					2		1							
Althvepsia.....						2														
Total miasmatic.....	23	21	6	33		182	173	133	136	58	71	52	61	23	16	1				
Order 2.— <i>Enthetic</i> .																				
Syphilis, congenital.....						4		4	9											
tertiary.....											1		1							
variety not stated.....		1																		
Total enthetic.....		1				4		4	9	1			1	1						

Chapter 3. *Exotic*.

[illegible]

Order 4.—*Parasitic.*

[illegible]

Order 1.—*Diathetic.*

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH RATE.		RECAPITULATION.										1894.															
			Deaths per 1,000 inhabitants.		Total by color and sex.					Total by color.					July.					August.										
			W.	C.	Total by color and sex.			W.	F.	C.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.	W.	M.	F.	C.					
					M.	F.	C.																							
CLASS II.—CONSTITUTIONAL DISEASES.																														
Order 1.—Diathetic.																														
Cancer of nose.....	1	0.02	0.01		1									1																
" kidneys.....	2	.02	.01		1	1								2																
" antrum.....	1	.02	.01					1						1																
Gout.....	1	.02		.01																										
Total diathetic.....	212	3.80	.84	.65	61	94	18	39					57		79	133	3	9	1	2	5	9								
Order 2.—Tubercular.																														
Consumption.....	671	12.06	1.77	3.98	185	140	174	172					325		359	312	14	11	12	13	13			3	10	12				
Marasmus.....	88	1.58	.22	.54	15	26	26	21					41		47	41	3	4	1	3				2	3	1				
Tuberculosis.....	106	1.90	.20	.80	16	21	31	38					37		69	47	59	1	2	4	5			4	1	3				
Tubercular meningitis.....	29	.52	.06	.20	6	6	8	9					12		17	14	15	1		1										
Tubercular peritonitis.....	6	.11	.02	.02	2	2		2					4		2	4		2												
Hydrocephalus.....	12	.22	.03	.08	3	2	7						5		7	10	2		1											
Tubercular meningitis.....	19	.34	.05	.10	7	3	2	7					10		9	9	10													
Tubercular enteritis.....	3	.14	.02	.06	2	1	5						3		5	7	1													
Scrofula.....	8	.06	.01	.01	2			1					2		1	3														
Tubercular laryngitis.....	6	.11	.03	.01	4	1		2					1		5	1	4	2		1				1		1				
Morbus coxae.....	3	.01	.01	.01	1	1		1					2		1	1	2													
Pott's disease.....	1	.02	.01										1				1													
Total tubercular.....	960	17.26	2.44	5.89	244	204	259	253	448	512	503	457	503		457	20	19	20	22	14	10	14	21	21						
Total constitutional diseases.....	1,172	21.06	3.28	6.54	305	298	277	292	603	569	582	590	582		590	23	28	21	24	19	19	14	22	22						
CLASS III.—LOCAL DISEASES.																														
Order 1.—Nervous system.																														
Cerebral thrombus.....	3	.05	.02		2	1							3		2															
Meningitis, cerebral.....	61	1.09	.21	.24	29	11	9	12					40		21	33									2	1	2			
" spinal.....	23	.41	.03	.01	7	3	1	5					11		10	14									2	1	1			
" cerebro-spinal.....	61	.38	.06	.12	7	4	7	3					11		10	14									2	1	1			
Apoplexy.....	169	3.04	.64	.59	68	50	21	39	113	51	89	80	89		6	6	2	1	4	5				6						

Epilepsy.....	35	.67	.14	.16	16	5	9	5	21	14	25	10	2	2	4	1	1
Insanity.....	37	.16	.16	.07	23	8	2	4	31	6	25	12	1	3	1	3	1
Congestion of brain.....	31	.56	.10	.13	7	13	6	3	2	11	13	1	1	1	3	1	1
Inflammation of brain.....	34	.41	.09	.07	8	9	1	1	17	6	13	10	1	1	3	1	1
Schizophrenia.....	23	.41	.09	.07	8	9	1	1	17	6	13	10	1	1	3	1	1
Alcoholism of brain.....	5	.09	.02	.05	3	1	3	3	3	3	3	3	4	1	1	1	1
Tumor of brain.....	7	.13	.02	.05	3	1	3	3	3	3	3	3	4	1	1	1	1
Paralysis.....	51	.91	.17	.22	19	13	9	10	32	19	28	23	5	1	1	1	1
Hemiplegia.....	37	.67	.06	.29	9	3	8	17	32	25	17	20	1	1	1	5	1
Paresis.....	10	.18	.01	.09	1	1	2	6	2	8	3	7	1	1	1	1	1
Trismus nascentium.....	24	.44	.04	.20	3	4	9	8	7	17	12	12	1	1	1	1	1
Convulsions.....	125	2.25	.21	1.00	18	20	52	35	38	87	70	55	4	3	8	2	3
Stroke (insolation).....	33	.59	.09	.18	14	3	9	7	17	16	23	10	3	1	1	1	1
Myelitis.....	1	.02	.01	.01	3	1	2	4	2	4	2	3	3	1	1	1	1
Locomotor ataxia.....	6	.07	.02	.02	2	4	1	2	2	2	2	2	2	1	1	1	1
Tetanus (idiopathic).....	2	.07	.01	.02	2	4	1	2	2	2	2	2	2	1	1	1	1
Cerebral embolism.....	10	.18	.05	.01	5	4	1	9	1	6	4	4	1	1	1	1	1
Cerebral hemorrhage.....	14	.25	.07	.09	9	5	14	14	14	9	5	5	1	1	1	1	1
Cerebral atrophy.....	6	.11	.02	.02	4	2	2	4	2	2	2	6	2	2	1	1	1
Neurasthenia.....	2	.03	.01	.01	1	1	1	1	1	1	1	1	1	1	1	1	1
Hydrophobia.....	1	.02	.01	.01	1	1	1	1	1	1	1	1	1	1	1	1	1
Progressive muscular atrophy.....	1	.02	.01	.01	1	1	1	1	1	1	1	1	1	1	1	1	1
Total diseases of nervous system.....	730	13.13	2.29	3.57	256	164	153	157	420	310	409	321	32	18	23	17	4
Order 2.—Circulatory organs.																	
Endocarditis.....	11	.20	.04	.03	8	3	2	1	8	3	10	1	2	1	1	1	1
Angina pectoris.....	24	.44	.07	.13	9	4	5	6	13	11	14	10	1	1	1	1	1
Fatty degeneration of heart.....	22	.40	.06	.12	10	2	3	7	12	10	13	9	1	1	1	1	1
Dilatation of heart.....	26	.47	.08	.12	15	1	6	4	16	10	21	5	2	2	1	1	1
Valvular disease of heart.....	199	3.58	.36	1.05	64	44	39	52	94	91	103	96	2	1	4	1	5
Hypertrophy of heart.....	13	.23	.05	.05	5	4	1	3	9	4	6	7	1	1	1	1	1
Atrophy of heart.....	2	.03	.01	.01	1	1	1	1	1	1	1	1	1	1	1	1	1
Thrombosis cardiacus.....	9	.16	.03	.03	3	3	3	3	6	3	3	6	1	1	1	1	1
Embolism cardiacus.....	2	.03	.01	.01	2	2	2	2	2	2	2	2	1	1	1	1	1
Hyperemic heart.....	16	.28	.02	.15	8	3	7	6	13	7	9	9	1	1	1	1	1
Heart disease, undefined.....	22	.40	.06	.12	10	2	3	8	12	10	10	12	1	1	1	1	1
Cardiac asthma.....	4	.07	.01	.02	1	1	1	2	2	2	2	1	3	1	1	1	1
Aorta, aneurism of.....	4	.07	.01	.02	2	2	2	2	2	2	2	4	1	1	1	1	1
Aneurism of arch of aorta.....	1	.02	.01	.01	1	1	1	1	1	1	1	1	1	1	1	1	1
Aortic stenosis.....	5	.09	.02	.02	2	1	1	1	3	2	3	2	1	1	1	1	1
Cardiac paralysis.....	4	.07	.03	.03	1	3	1	1	4	4	1	3	3	3	1	1	1
Myocarditis.....	5	.09	.01	.03	1	1	2	1	2	3	3	2	2	2	1	1	1
Pericarditis.....	4	.07	.02	.02	1	1	1	1	3	1	2	2	2	2	1	1	1
Total diseases of circulatory organs.....	373	6.70	1.13	1.90	135	73	70	95	208	165	205	168	6	4	5	10	4
Order 3.—Respiratory organs.																	
Pneumonia.....	413	7.43	1.13	2.37	114	97	100	106	207	206	214	199	3	1	2	1	3
Bronchitis.....	122	2.20	.30	.78	24	20	31	37	54	68	53	67	3	1	4	2	4
Congestion of lungs.....	115	2.07	.29	4.72	24	29	33	27	53	62	59	56	1	1	2	1	2

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

1893.

1894.

Cause of death.

CLASS II.—CONSTITUTIONAL DISEASES.

Order 1.—*Diathetic*.

Cancer of nose

kidneys

antrum

(toitre

Total diathetic.

Order 2.—*Tubercular*.

Consumption

Marasmus

Tuberculosis

Tubercular meningitis

peritonitis

Hydrocephalus

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

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Tubercular enteritis

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Tubercular enteritis

1893.

1894.

Cause of death.

CLASS II.—CONSTITUTIONAL DISEASES.

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Tuberculosis

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peritonitis

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Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

Tubercular enteritis

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

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TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc., etc.—Continued.

1895.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Cause of death.						February.						March.						Total third quarter.						April.						May.						June.						Total fourth quarter.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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TABLE I.—*Showing total number of deaths occurring in the District of Columbia, etc., etc.*—Continued.

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.						Unknown.						District of Columbia.					
	W.			C.			W.			C.			W.			C.		
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
CLASS III.—LOCAL DISEASES.																		
Order 3.—Respiratory organs.																		
Edema of lungs.....	4	5	1	5			3	2	2	1	1	6	5	7	9	9	2	
Diphtheria.....	2	1	1	1			2	1	1	1		5	1	2	1	3		
Empysema of lungs.....							1					1		1				
Abscess of lungs.....																		
Gangrene of lungs.....	1											1			1			
Laryngismus stridulus.....																		
Asthma.....																		
Pulmonary hemorrhage.....	4	1	1	1			1	1					2	3	2	3	1	
Edema of larynx.....	3	1	4				1					4		2	5	2		
Laryngitis.....															1			
Embolism of artery.....							3	7										
Pulmonary extravasation.....	1														1			
Total diseases of respiratory organs.....	29	48	17	30			91	96	122	119		69	60	66	77	47	23	
Order 4.—Digestive organs.																		
Dentition.....							15	10	22	19		6	2	5		4	8	
Gastritis.....	2	7		2			6	4	4	1	4	2	2					
Gastro-enteritis.....							11	16	7	15		2	1		5			
Enteritis.....	1	1	1				4	10	1	6		8	2	9	3	2	2	
Gastro-intestinal catarrh.....	1	2					3	5	1	1		2	2		4	2		
Gastric catarrh.....	3	3		1			1	1				1	1		1	1	2	
Peritonitis.....	2	2	1	1			1	2	2	2		2	4	3	4	6	2	
Cirrhosis of liver.....	2	2	2				2					6	3	2	3	5	3	
Congestion of liver.....												1		2				
Abscess of liver.....	2								1			2	2	2	2	1		
Hypertrophy of liver.....							2						1					
Hepatitis.....	1								1			2				1		
Jaundice.....																		
Appendicitis.....							2	1						2				
Ulcer of intestines.....	1	1										4	3	2		1		
Enteric catarrh.....	1	1		1								1	1		2			
Hernia.....			2				4	2	4	5		1	1	4	1	2	1	2

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH RATE.		RECAPITULATION.										1894.					
			Deaths per 1,000 inhabitants.		Total by color and sex.					Total by color.		Total by sex.		July.		August.				
			W.	C.	W.	F.	M.	F.	C.	W.	C.	M.	F.	W.	C.	M.	F.	M.	F.	C.
			W.	C.	M.	F.	M.	F.	W.	C.	M.	F.	W.	C.	M.	F.	M.	F.	M.	F.
CLASS III.—LOCAL DISEASES.																				
Order 7.—Osteoma and locomotory.																				
Ulcer of leg.	4	0.07	0.01	0.02	1	1	2		2	2	3	1								
Necrosis of tibia.	2	.03		.02			2				2									
Thecal abscess of foot.	1	.02		.01			1		1		1									
Lumbar abscess.	1	.02		.01																
Total osteoma and locomotory	13	.23	.03	.09	2	3	6	2	5	8	8	5	1	1	1					
Order 8.—Integumentary.																				
Medullary sarcoma.	1	.02	.01		1				1		1									
Epistaxis.	1	.02	.01		1				1		1									
Gangrene of foot.	3	.02	.01		1	1		1	3	1	2	1			1					
Legs.	3	.05	.01	.01	2	1			3	1	1	1			1					
band.	1	.05	.01		1				1		1									
Otitis media.	3	.05	.01		1	2			3	1	1	2			1					
Adenitis.	1	.02	.01		1				1		1									
Sarcoma, leg.	2	.03		.02		2				2	2				1					
testicle.	1	.02	.01			1			1		1									
Abdominal tumor.	1	.02	.01		1						1									
Abscess of jaw.	1	.02			1				1		1									
Total integumentary	18	.32	.08	.04	9	5	3	1	14	4	12	6	2		1	1	2			
Total local diseases.	2,617	47.02	8.14	12.91	865	629	545	578	1,494	1,123	1,410	1,207	66	52	56	59	67	47	20	
CLASS IV.—DEVELOPMENTAL.																				
Order 1.—Children.																				
Premature birth.	109	1.97	.33	.57	36	25	23	25	61	48	59	50	2	3	1	3	1	1	3	
Congenital debility.	60	1.09	.14	.36	14	15	16	15	29	31	30	30	2	1	3	3	1		3	
Cyanosis.	5	.09	.02	.01	2	1		1	4	4	2	3								
Atelectasis pulmonum.	14	.25	.04	.08	3	4	4	3	7	7	7	7								
Umbilical hemorrhage.	7	.12	.08	.08		3	4	4			3	4								
Protracted and difficult labor.	10	.18	.03	.05	4	2	3	1	6	4	7	7								
Open fontanel ovale.	8	.14	.03	.03	3	2	2	1	5	3	5	3			1				1	

TABLE I.—*Showing total number of deaths occurring in the District of Columbia, etc.—Continued.*

[illegible]

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc., etc.—Continued.

[illegible]

Order 3.—Homicides.

[illegible]

Order 3.—Homicides.

Laceration of kidney.....	1	1
Fracture of skull.....	1	1
Gunshot.....	1	1
Laceration of carotid.....	1	1
Stabbed.....	1	1

Order 4.—*Suicides.*

[illegible]

RECAPITULATION:

[illegible][illegible]

	25	21	5	6	1	4	1	1	1	125	113	72	83	152	125	187	158
Total constitutional diseases.																	
Local:																	
Nervous system.....	24	25	6	14	12	13	5	6	1	4	44	36	23	109	67	103	83
Circulatory organs.....	22	18	7	11	6	2	4	1	1	4	63	26	34	28	41	15	16
Respiratory organs.....	28	18	8	7	10	14	2	6	1	1	93	41	41	28	85	90	130
Digestive organs.....	12	10	5	1	2	4				2	49	34	10	13	86	62	71
Urinary organs.....	25	15	2		4		1		1	1	67	29	24	11	21	7	10
Generative organs.....											9			9		5	2
Ossaceous and locomotory.....			1				1		1		2	3			1	1	1
Integumentary.....										5							

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	Total deaths from each cause.	Per cent of each cause to total mortality.	DEATH RATE.		RECAPITULATION.														1894.							
			Deaths per 1,000 inhabitants.		Total by color and sex.				Total by color.				Total by sex.		July.				August.							
			W.	C.	W.	F.	M.	F.	W.	C.	W.	F.	W.	C.	W.	F.	M.	F.	W.	C.	W.	F.	M.	F.		
RECAPITULATION.																										
Developmental:																										
Infants.....	248	4.45	0.73	1.30	80	55	58	55	135	113	138	110	8	5	5	6	2	1	7	5	2	2	2	2		
Women.....	55	1.00	.15	.32	27	27	28	28	27	28	28	55	2	2	2	4	4	4	3	2	2	2	2	2		
Old age.....	172	3.10	.52	.87	61	35	61	34	42	96	76	69	103	3	4	2	5	3	4	3	2	2	2	2		
Nutrition.....	17	.34	.09	.05	3	10	3	1	13	4	6	11	1	1	1	1	1	1	1	1	1	1	1	1		
Total developmental.....	492	8.89	1.49	2.54	118	153	95	126	271	221	213	279	12	12	8	15	5	5	10	9	9	9	9	9		
Violence:																										
Accidents and negligence.....	207	3.72	.72	.88	96	35	46	30	131	76	142	65	11	1	9	5	8	1	1	2	1	2	1	2		
Judicial execution.....	0	.12	.02	.05	1	2	3	1	3	4	4	3	1	1	1	1	1	1	1	1	1	1	1	1		
Homicides.....	7	.58	.15	.03	24	5	2	1	29	3	26	6	2	1	1	1	1	1	1	1	1	1	1	1		
Suicides.....	32	.58	.15	.03	24	5	2	1	29	3	26	6	2	1	1	1	1	1	1	1	1	1	1	1		
Wounds in late civil war.....	248	4.42	.89	.96	123	42	51	32	165	83	174	74	14	2	9	5	9	2	3	2	2	2	2	2		
Total violence.....	248	4.42	.89	.96	123	42	51	32	165	83	174	74	14	2	9	5	9	2	3	2	2	2	2	2		
SUMMARY.																										
I. Zymotic.....	1,036	18.61	3.17	5.23	304	277	220	235	581	455	524	512	39	54	39	47	36	26	38	36	36	36	36	36		
II. Constitutional.....	1,172	21.06	3.28	6.54	305	298	277	292	603	509	582	590	23	28	21	24	19	19	14	22	22	22	22	22		
III. Local.....	2,617	47.02	8.14	12.91	865	629	545	578	1,494	1,123	1,410	1,207	66	52	56	59	67	47	20	36	36	36	36			
IV. Developmental.....	492	8.89	1.49	2.54	118	153	95	126	271	221	213	279	12	12	8	15	5	5	10	9	9	9	9			
V. Violence.....	248	4.42	.89	.96	123	42	51	32	165	83	174	74	14	2	9	5	9	2	3	2	2	2	2			
Grand total from all causes, by sex and color.....	5,565	100.00	16.97	28.18	1,715	1,399	1,188	1,263	3,114	2,451	2,903	2,662	154	148	133	150	136	99	85	105	105	105	105			
Total from all causes, by color.....									3,114	2,451			302		283		235		190							
Percentages, by color, to total mortality.....									55.96	44.04			5.42		5.09		4.22		3.41							
Death rate per 1,000 inhabitants, by color.....									16.70	28.18			1.65		3.25		1.28		2.18							
Grand aggregate.....	5,565								5,565				585				425									
Death rate per 1,000 inhabitants, total population.....									20.57				2.16				1.57									

Cause of death.	1894.												Total second quarter.						1893.	
	September.			Total first quarter.			October.			November.			December.			Total second quarter.			January.	
	W.	C.		W.	C.		W.	C.		W.	C.		W.	C.		W.	C.	W.	C.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
RECAPITULATION.																				
Developmental:																				
Infants.....	4	3	2	6	14	9	14	17	6	3	2	3	10	7	4	2	6	7	3	22
Women.....	4	3	2	3	9	17	7	10	2	6	7	5	2	5	1	1	4	2	2	13
Old age.....	3	9	2	3	9	17	7	10	2	6	7	5	2	5	1	1	4	2	2	3
Nutrition.....					1	1	1	1										2	1	1
Total developmental.....	7	16	4	9	24	33	22	33	8	9	9	10	12	13	5	3	10	12	10	34
Violence:																				
Accidents and negligence.....																				
Judicial execution.....	12	2	4		31	4	14	7	11		7	3	5	5		3	7	7	3	23
Homicides.....																				
Suicides.....	1				1	1	1	1	1		1		1	1	1	1	3	2	1	6
Wounds in late civil war.....	2				5	2	1						3							2
Total violence.....	14	3	4		37	7	16	7	11		7	3	8	5	1	5	10	10	3	29
SUMMARY.																				
I. Zymotic.....	33	39	24	26	108	119	101	109	37	31	26	25	26	21	14	15	24	17	12	11
II. Constitutional.....	25	27	16	20	67	74	51	66	19	24	31	31	28	28	15	30	24	21	24	27
III. Local.....	62	47	32	45	195	146	108	140	55	52	50	44	53	37	40	50	75	57	53	48
IV. Developmental.....	7	16	4	9	24	33	22	33	8	9	10	12	13	5	3	10	12	10	8	13
V. Violence.....	14	3	4		37	7	16	7	11		7	3	8	5	1	5	10	10	3	29
Grand total from all causes, by sex and color.....	141	132	80	100	431	379	298	355	130	116	123	113	127	104	75	103	143	117	99	97
Total from all causes, by color.....	273	180			810		653		246		236		231		178		260		196	
Percentages, by color, to total mortality.....	4.90	3.23			14.54		11.73		4.42		4.23		4.15		3.20		4.68		3.52	
Death rate per 1,000 inhabitants, by color.....	1.48	2.07			4.41		7.50		1.34		2.71		1.36		2.05		1.42		2.25	
Grand aggregate.....	453				1,463				482				409				456		1,347	
Death rate per 1,000 inhabitants, total population.....	1.08				5.41				1.78				1.51				1.69		4.98	

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	1893.												Total fourth quarter.		
	February.			March.			Total third quarter.			May.			June.		
	W.	C.		W.	C.		W.	C.		W.	C.		W.	C.	
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
RECAPITULATION.															
Developmental:															
Infants.....	5	5	3	5	7	3	6	20	15	18	9	2	4	7	10
Women.....	3	3	4	4	2	9	9	9	3	3	1	4	4	2	9
Old age.....	3	4	5	1	10	4	5	8	20	12	10	3	5	3	1
Nutrition.....	1	4	5	1	1	1	3	1	4	4	1	4	1	4	1
Total developmental.....	9	12	9	12	6	22	7	13	29	52	27	37	13	15	5
Violence:															
Accidents and negligence.....	6	2	3	1	9	3	3	1	23	8	10	4	8	7	1
Judicial execution.....															
Homicides.....	1														
Suicides.....	2			4			8						3		1
Wounds in late civil war.....															
Total violence.....	8	2	4	1	13	3	3	1	31	8	11	4	10	7	1
SUMMARY.															
I. Zymotic.....	18	24	11	14	22	13	15	10	55	46	35	32	19	14	10
II. Constitutional.....	34	35	27	17	27	22	23	29	86	89	74	69	26	27	35
III. Local.....	75	58	56	49	91	72	60	63	248	192	162	151	82	62	43
IV. Developmental.....	9	12	9	12	6	22	7	13	29	52	27	37	13	15	5
V. Violence.....	8	2	4	1	13	3	3	1	31	8	11	4	10	7	1
Grand total from all causes, by sex and color.....	144	131	107	93	159	132	108	116	449	387	309	283	150	125	100
Total from all causes, by color.....	275		290	291		224		224	836		602		275		210
Percentages, by color, to total mortality.....	4.94		3.60	5.23		4.02		4.02	15.03		10.82		4.94		3.78
Death rate per 1,000 inhabitants, by color.....	1.50		2.30	1.59		2.57		2.57	4.56		6.92		1.50		2.42
Grand aggregate.....	475			515					1,438				485		
Death rate per 1,000 inhabitants, total population.....	1.75			1.91					5.31				1.79		

Cause of death.	AGE OF DECEDENT.																		Per cent of each cause to total mortality under 5 years of age.
	Under 1 year.			1 to 2 years.			2 to 3 years.			3 to 4 years.			4 to 5 years.			Total under 5 years.			
	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	W.		C.	
	M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		
RECAPITULATION.																			
Developmental:																			
Infants.....	80	55	55													80	55	55	248
Women.....																			
Old age.....																			
Nutrition.....																			
Total developmental.....	80	55	55													80	55	55	248
Violence:																			
Accidents and negligence.....																			
Judicial execution.....	2	4	3	6			2	2	1	1	1	1	1	1	1	3	6	8	7
Homicides.....																			
Suicides.....																			
Wounds in late civil war.....																			
Total violence.....	2	4	3	6			2	2	1	1	1	1	1	1	1	3	6	8	7
SUMMARY.																			
I. Zymotic.....	86	75	94	91	16	21	20	26	8	14	9	8	4	12	11	4	137	129	133
II. Constitutional.....	25	27	35	16	11	8	17	6	1	4	13	12	2	6	4	1	3	40	41
III. Local.....	132	104	161	148	30	33	40	39	9	12	13	19	5	3	8	5	6	4	1
IV. Developmental.....	80	55	58	55													182	156	225
V. Violence.....	2	4	3	6			2	2	1		1	1	1	1	1		3	6	8
Grand total from all causes, by sex and color.....	325	265	351	316	57	64	79	72	18	30	36	39	23	13	19	16	442	388	497
Total from all causes, by color.....	590	667			121	151			48	75			36	32	35		830	945	
Percentages, by color, to total mortality.....	10.60	12.00			2.17	2.71			0.86	1.35			0.64	0.57	0.63		14.91	16.98	31.89
Death rate per 1,000 inhabitants, by color.....	3.16	7.66			.65	1.74			.26	.86			.19	.37	.18		4.52	10.86	
Grand aggregate.....	1,257				272				123				68		55		1,775		
Death rate per 1,000 inhabitants, total population.....	4.65				1.01				0.45				0.25		0.19		6.55		

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

		AGE OF DECEDENT.																							
		5 to 10 years.			10 to 20 years.			20 to 30 years.			30 to 40 years.			40 to 50 years.			50 to 60 years.			60 to 70 years.					
		W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.	W.	C.	M. F.
Cause of death.		M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.	M. F.	C.	M. F.
RECAPITULATION.																									
Developmental:																									
Infants.....																									
Women.....																									
Old age.....																									
Nutrition.....																									
Total developmental.....																									
Violence:																									
Accidents and negligence.....		8	1	6	1	17	8	4	19	3	14	7	12	4	6	4	11	4	2	3	12	3	3	1	10
Judicial execution.....																									
Homicides.....																									
Suicides.....																									
Wounds in late civil war.....																									
Total violence.....		8	1	6	1	17	9	8	5	26	4	16	8	17	6	7	4	18	6	3	3	15	4	4	1
SUMMARY.																									
I. Zymotic.....		24	35	18	17	20	16	13	21	32	25	16	12	21	14	7	8	16	12	10	17	18	15	4	13
II. Constitutional.....																									
III. Local.....		16	11	12	22	19	18	21	31	44	33	29	38	54	47	42	34	79	64	55	67	149	80	79	66
IV. Developmental.....																									
V. Violence.....		8	1	6	1	17	9	8	5	26	4	16	8	17	6	7	4	18	6	3	3	15	4	4	1
Grand total from all causes, by sex and color.		49	47	41	49	63	63	70	119	168	132	129	144	135	133	91	92	148	130	92	124	230	138	114	99
Total from all causes, by color.....		96		90		126		189		300		273		258		183		278		216		308		213	
Percentages, by color, to total mortality.....		1.72		1.62		2.26		3.40		5.40		4.91		4.64		3.29		5.00		3.88		6.61		3.83	
Death rate per 1,000 inhabitants, by color.....		.50		1.03		.68		2.18		1.61		3.15		1.39		2.11		1.49		2.46		1.97		2.44	
Grand aggregate.....		186				315				573				441				494						581	
Death rate per 1,000 inhabitants, total population.		0.69				1.17				2.12				1.63				1.83						2.14	

Cause of death.	AGE OF DECEDENT.						SOCIAL RELATIONS.									
	70 to 80 years.			80 to 90 years. 90 to 100 years.			Unknown age.			Married.			Single.			
	W.	C.		W.	C.		W.	C.		W.	F.	M.	F.	M.	F.	
RECAPITULATION.																
Developmental:																
Infants.....																
Women.....																
Old age.....	16	19	10	13	32	8	17	4	6	10	8					
Nutrition.....	1	3			6		1		1							
Total developmental.....	17	22	10	13	38	8	17	5	6	11	8					
Violence:																
Accidents and negligence.....	2		2	2	4						1					
Judicial execution.....																
Homicides.....																
Suicides.....	1															
Wounds in late civil war.....																
Total violence.....	3		2	2	4						1					
SUMMARY.																
I. Zymotic.....	14	10	9	2	9	6	2	1			2					
II. Constitutional.....	25	21	5	6	1	4					1					
III. Local.....	111	86	29	33	39	38	9	18	1	4	2	7				
IV. Developmental.....	17	22	10	13	38	8	17	5	6	11	8					
V. Violence.....	3			2	2	4										
Grand total from all causes, by sex and color.....	170	139	53	53	64	90	19	37	6	10	13	19				
Total from all causes, by color.....	309		106		154		56		16		32					
Percentages, by color, to total mortality.....	5.56		1.90		2.77		1.00		0.28		0.57					
Death rate per 1,000 inhabitants, by color.....	1.65		1.22		.83		.65		.08		.37					
Grand aggregate.....	415				210				48							
Death rate per 1,000 inhabitants, total population.....	1.53				0.78				0.18							

TABLE I.—Showing total number of deaths occurring in the District of Columbia, etc.—Continued.

Cause of death.	SOCIAL RELATIONS.						NATIVITY.											
	Widow or widower.			Unknown.			District of Columbia.			Other parts of United States.						Foreign.		
	W.	C.	F.	M.	F.	M.	W.	F.	M.	C.	W.	F.	M.	C.	W.	F.	M.	C.
RECAPITULATION.																		
Developmental:																		
Diphtheria																		
Whooping cough																		
Old age	17	54	19	36			80	55	58	55		19	37	13		2		
Nutrition	5	2	1				3	9	5	5		1	6	3		1		
Total developmental	17	59	21	37			84	71	58	69		65	37	57		14		
Violence:																		
Accidents and negligence	7	7	3	4			1	34	14	26		14	20	18		20	7	
Judicial execution																		
Homicides	1											1	2	3		1		
Suicides	1						5	1				14	3	2		5	1	
Wounds in late civil war																		
Total violence	7	9	3	4			1	40	15	26		57	19	25		26	8	
SUMMARY.																		
I. Zymotic	25	22	7	33														
II. Constitutional	28	60	18	51			209	188	163	173		68	73	56		27	16	1
III. Local	126	189	66	152			116	121	136	136		118	142	140		71	35	1
IV. Developmental	17	59	21	37			290	259	277	280		351	251	267		224	119	1
V. Violence	7	9	3	4			84	71	58	69		58	63	37		57	14	17
Grand total from all causes, by sex and color	203	339	115	277			1	739	654	660		614	550	525		362	195	3
Total from all causes, by color	542	392					1	1,393		1,320		1,164		1,128		557		3
Percentages, by color, to total mortality	9.73	7.05					25.04		23.73			20.92		20.27		9.99		0.05
Death rate per 1,000 inhabitants, by color	2.91	4.52					7.47		15.17			6.25		12.97		2.98		.04
Grand aggregate	934						1	2,713				2,292				560		
Death rate per 1,000 inhabitants, total population	3.45							10.03				8.47				2.07		

TABLE II.—Statement showing the mortality from eleven prominent diseases, by months, during the decade ended June 30, 1895.

Disease.	January.	February.	March.	April.	May.	June.	July.	August.
Pneumonia	615	521	631	562	266	251	73	92
Bronchitis	204	213	225	176	131	72	66	47
Congestion of lungs	162	88	105	95	60	45	26	25
Phthisis pulmonalis	661	653	708	699	626	519	558	516
Diphtheria	86	57	51	54	63	73	71	115
Scarlet fever	45	45	89	81	63	55	18	22
Measles	52	84	87	58	35	26	17	3
Whooping cough	49	34	48	42	49	55	102	87
Diarrheal diseases	40	43	50	40	105	1,080	1,335	818
Typhoid fever	78	66	74	65	54	112	178	209
Tuberculosis	52	59	58	54	53	58	68	63

Disease.	September.	October.	November.	December.	Total.	Monthly average.	Month of maximum intensity.
Pneumonia	106	178	251	370	3,916	326.3	March.
Bronchitis	53	87	100	147	1,521	127.6	Do.
Congestion of lungs	39	65	68	90	868	72.3	January.
Phthisis pulmonalis	554	588	554	628	7,264	605.3	March.
Diphtheria	172	175	159	145	1,221	101.7	October.
Scarlet fever	14	13	12	19	476	39.7	March.
Measles	5	2	1	4	374	31.2	Do.
Whooping cough	79	53	25	38	611	50.9	July.
Diarrheal diseases	455	213	67	52	4,298	358.2	Do.
Typhoid fever	248	255	196	158	1,693	141.1	October.
Tuberculosis	58	62	53	48	686	57.2	July.

TABLE III.—Deaths under 1 year of age, arranged monthly, for the year ended June 30, 1895.

	1 day and under.	1 day to 1 week.	1 week to 1 month.	1 to 2 months.	2 to 3 months.	3 to 4 months.	4 to 5 months.	5 to 6 months.	6 to 7 months.	7 to 8 months.	8 to 9 months.	9 to 10 months.	10 to 11 months.	11 to 12 months.	Total.	Total by color.
July, 1894:																
White males	6	3	4	5	2	3	7	3	4	0	4	4	2	0	48	100
White females	3	0	5	5	2	3	8	4	5	4	1	0	7	2	52	
Colored males	3	6	6	2	2	7	6	6	4	3	2	0	5	1	52	107
Colored females	3	3	4	2	7	13	6	4	5	4	2	0	2	0	55	
Total	13	12	19	14	16	26	27	17	18	11	9	4	17	4	207	207
August, 1894:																
White males	4	1	2	5	1	1	4	1	0	2	3	6	2	2	34	50
White females	0	1	2	2	2	1	3	2	2	0	1	0	0	0	16	
Colored males	5	4	1	2	3	6	3	3	3	2	0	1	2	1	35	67
Colored females	4	1	1	6	5	5	1	0	1	1	2	3	0	2	32	
Total	13	7	6	15	11	13	10	6	6	5	6	10	4	5	117	117
September, 1894:																
White males	3	0	1	2	1	5	2	3	2	2	1	1	2	2	27	60
White females	2	1	2	4	10	0	2	1	3	2	0	1	2	3	33	
Colored males	2	5	3	3	6	3	3	4	1	2	1	0	0	0	33	61
Colored females	1	2	4	3	4	3	1	1	4	1	2	1	0	1	28	
Total	8	8	10	12	21	11	8	9	10	7	4	3	4	6	121	121
October, 1894:																
White males	4	2	1	4	1	2	0	1	2	1	0	3	1	2	24	44
White females	0	3	2	7	2	1	1	3	0	1	0	0	0	0	20	
Colored males	1	3	3	4	7	0	1	2	4	0	0	1	1	2	29	60
Colored females	4	5	5	3	2	3	2	1	0	2	0	2	1	1	31	
Total	9	13	11	18	12	6	4	7	6	4	0	6	3	5	104	104

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TABLE III.—Deaths under 1 year of age, arranged monthly, etc.—Continued.

	1 day and under.	1 day to 1 week.	1 week to 1 month.	1 to 2 months.	2 to 3 months.	3 to 4 months.	4 to 5 months.	5 to 6 months.	6 to 7 months.	7 to 8 months.	8 to 9 months.	9 to 10 months.	10 to 11 months.	11 to 12 months.	Total.	Total by color.
November, 1894:																
White males.....	4	3	2	3	3	0	1	0	0	0	0	0	1	0	17	32
females.....	6	2	1	1	3	0	1	0	0	1	0	0	0	0	15	
Colored males.....	4	3	4	1	3	2	1	1	2	0	0	1	0	1	24	40
females.....	1	2	5	1	3	1	0	1	1	1	0	0	0	0	16	
Total.....	15	10	12	6	12	3	4	2	3	2	0	1	1	1	72	72
December, 1894:																
White males.....	4	3	1	3	1	3	3	1	1	0	0	1	1	0	22	36
females.....	3	2	1	2	1	2	0	0	0	1	1	0	0	1	14	
Colored males.....	6	2	2	3	3	3	1	0	2	0	0	1	0	0	23	40
females.....	1	3	1	2	2	2	2	1	1	0	0	1	0	1	17	
Total.....	14	10	5	10	7	10	6	2	4	1	1	3	1	2	76	76
January, 1895:																
White males.....	7	4	4	2	1	0	3	0	2	1	0	0	0	0	24	42
females.....	4	3	2	1	0	1	2	1	1	1	0	2	0	0	18	
Colored males.....	2	5	2	0	1	0	1	5	2	1	1	0	2	0	22	47
females.....	1	5	5	2	1	2	2	1	3	3	0	0	0	0	25	
Total.....	14	17	13	5	3	3	8	7	8	6	1	2	2	0	89	89
February, 1895:																
White males.....	2	2	2	2	2	0	0	0	3	1	0	3	2	1	20	36
females.....	5	1	1	0	3	0	2	2	0	1	0	0	1	0	16	
Colored males.....	2	5	1	2	3	1	3	4	3	0	3	1	2	1	31	51
females.....	1	2	2	0	3	3	3	2	2	0	0	0	1	1	20	
Total.....	10	10	6	4	11	4	8	8	8	2	3	4	6	3	87	87
March, 1895:																
White males.....	4	2	2	5	4	0	5	0	1	2	2	1	0	0	28	56
females.....	3	4	5	1	4	1	0	2	1	0	3	2	1	1	28	
Colored males.....	2	3	5	3	0	1	0	2	2	2	1	0	1	0	22	51
females.....	4	2	3	2	1	3	0	3	3	1	1	2	1	3	29	
Total.....	13	11	15	11	9	5	5	7	7	5	7	5	3	4	107	107
April, 1895:																
White males.....	6	4	3	1	2	1	1	0	0	3	1	0	1	3	26	43
females.....	2	1	1	0	6	2	0	0	1	0	1	2	0	1	17	
Colored males.....	3	1	4	2	4	1	2	1	0	0	2	0	2	1	23	45
females.....	1	3	6	2	2	1	3	0	0	0	2	1	0	1	22	
Total.....	12	9	14	5	14	5	6	1	1	3	6	3	3	6	88	88
May, 1895:																
White males.....	6	3	0	2	2	1	0	0	4	1	2	1	0	2	24	41
females.....	3	1	5	1	0	1	0	1	0	0	2	1	1	1	17	
Colored males.....	2	4	2	2	5	1	2	0	1	0	3	3	0	0	25	45
females.....	3	4	3	2	1	1	2	0	1	0	1	0	1	1	20	
Total.....	14	12	10	7	8	4	4	1	6	1	8	5	2	4	86	86
June, 1895:																
White males.....	5	0	0	1	1	3	4	6	3	1	0	5	0	1	30	50
females.....	0	2	1	0	1	0	1	1	5	2	2	2	2	1	20	
Colored males.....	3	4	3	2	2	3	0	5	2	1	4	1	1	0	31	53
females.....	2	3	5	1	2	2	2	0	0	3	0	1	1	0	22	
Total.....	10	9	9	4	1	8	7	12	10	7	6	9	4	2	103	103

TABLE III.—Deaths under 1 year of age, arranged monthly, etc.—Continued.

RECAPITULATION.

Age.	Grand total.	Per cent to total mortality under 1 year old.	Total white males.	Per cent to total mortality under 1 year old.	Total white females.	Per cent to total mortality under 1 year old.	Total colored males.	Per cent to total mortality under 1 year old.	Total colored females.	Per cent to total mortality under 1 year old.
1 day and under	145	11.5	55	17.0	30	11.3	34	9.7	26	8.2
1 day to 1 week	128	10.1	27	8.3	21	7.9	45	12.8	35	11.1
1 week to 1 month	130	10.2	22	6.8	28	10.5	36	10.3	44	13.9
1 month to 2 months	111	8.8	35	10.8	24	9.0	26	7.4	26	8.2
2 months to 3 months	130	10.4	21	6.5	37	13.9	39	11.1	33	10.4
3 months to 4 months	98	7.8	19	5.9	12	4.5	28	8.0	39	12.2
4 months to 5 months	97	7.7	30	9.3	20	7.5	23	6.6	24	7.6
5 months to 6 months	79	6.3	15	4.6	17	6.4	33	9.5	14	4.4
6 months to 7 months	87	7.0	22	6.8	18	6.8	26	7.4	21	6.6
7 months to 8 months	54	4.4	14	4.3	13	4.9	11	3.1	16	5.0
8 months to 9 months	51	4.0	13	4.0	11	4.2	17	4.9	10	3.4
9 months to 10 months	55	4.4	25	7.7	10	3.7	9	2.6	11	3.5
10 months to 11 months	50	4.0	13	4.0	14	5.2	16	4.6	7	2.1
11 months to 12 months	42	3.4	13	4.0	11	4.2	7	2.0	11	3.4
Total	1,257	100.0	324	100.0	266	100.0	350	100.0	317	100.0
Total by color			590					667		
Per cent to mortality under 1 year old by color			46.94					53.06		

TABLE IV.—Number of deaths of children under 5 years of age from the principal diseases of children for the year ended June 30, 1895.

Diseases.	White.		Colored.	
	Deaths.	Percentage of total mortality under 5 years old.	Deaths.	Percentage of total mortality under 5 years old.
Measles	2	0.25	1	0.10
Croup	11	1.32	2	0.20
Diphtheria	47	5.62	14	1.48
Scarlet fever	9	1.09		
Typhomalarial fever	2	0.25		
Diarrheal diseases	105	12.65	126	13.33
Whooping cough	23	2.77	32	3.39
Inanition	24	2.88	32	3.39
Tubercular diseases (excluding consumption)	70	8.45	80	8.47
Consumption	7	0.84	32	3.39
Acute diseases of brain	32	3.86	44	4.65
Convulsions	37	4.46	87	9.21
Trismus nascentium	7	0.84	17	1.80
Bronchitis	24	2.89	54	5.72
Congestion of lungs	20	2.41	40	4.24
Pneumonia	80	9.64	101	10.69
Diseases of the digestive organs	96	11.57	99	10.48
Developmental diseases	135	16.27	113	11.96
Accidents and negligence	9	1.09	15	1.58
All others	90	10.85	56	5.92
Total	830	100.00	945	100.00
Percentage of mortality, by color, under 5 years old		4.52		10.86
Annual death rate, by color		46.76		53.24

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TABLE V.—*Number dying 70 years of age and over during year ended June 30, 1895.*

Age.	White.		Colored.		Total.	Age.	White.		Colored.		Total.
	Male.	Fe- male.	Male.	Fe- male.			Male.	Fe- male.	Male.	Fe- male.	
70 years.....	22	21	15	13	71	87 years.....	3	9	1	2	15
71 years.....	13	6	2	3	24	88 years.....	2	2	2	1	7
72 years.....	23	16	3	2	44	89 years.....	3	3	1	1	8
73 years.....	18	19	1	5	43	90 years.....	4	2	3	4	13
74 years.....	19	16	3	4	42	91 years.....	1	.....	1	.....	2
75 years.....	16	15	18	16	65	92 years.....	.....	.....	1	4	5
76 years.....	16	9	4	2	31	93 years.....	2	1	2	2	7
77 years.....	16	15	2	3	36	94 years.....	3	1	1	2	7
78 years.....	14	10	4	2	30	95 years.....	1	.....	1	3	5
79 years.....	6	13	1	2	22	96 years.....	.....	1	.....	.....	1
80 years.....	14	16	1	15	46	97 years.....	.....	.....	1	1	2
81 years.....	7	9	3	2	21	98 years.....	.....	.....	.....	.....	.....
82 years.....	7	10	1	.....	18	99 years.....	.....	.....	1	.....	1
83 years.....	8	8	.....	2	18	100 years and over	.....	.....	3	3	6
84 years.....	3	15	3	6	27						
85 years.....	8	9	3	5	25						
86 years.....	4	8	3	4	19						
						Total	233	234	85	109	661

TABLE VI.—*Number and average ages in years of decedents dying from eighteen different diseases and from suicide during the year ended June 30, 1895.*

Diseases.	White.				Colored.			
	Male.		Female.		Male.		Female.	
	Total deaths.	Years.	Total deaths.	Years.	Total deaths.	Years.	Total deaths.	Years.
Consumption.....	185	41	140	36	174	30	172	28
Typhoid fever.....	62	27	56	26	33	20	36	26
Apoplexy.....	68	60	50	61	21	59	30	57
Insanity.....	23	57	8	65	2	60	4	60
Softening of brain.....	8	50	9	65	5	63	1	65
Paralysis, hemiplegia, and paraple- gia.....	29	60	17	55	19	52	33	57
Cancers.....	40	58	72	54	5	59	23	51
Epilepsy.....	16	48	5	30	9	29	5	33
Diseases of the heart.....	132	58	73	54	68	54	95	52
Bright's disease and nephritis.....	69	55	43	50	28	47	22	40
Rheumatism.....	15	50	12	56	7	56	7	41
Aneurism.....	3	58	.....	.....	2	45	.....	.....
Angina pectoris.....	9	61	4	72	5	70	6	52
Gastritis.....	16	40	14	54	6	36	4	23
Cirrhosis of liver.....	13	56	6	56	3	58	3	68
Dropsey.....	2	65	5	69	3	58	7	60
Diabetes.....	7	55	5	57	2	50
Hernia.....	1	65	6	44	9	32
Suicides.....	26	43	5	59	2	48	1	18

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TABLE VII.—Number of deaths occurring in hospitals and other public institutions during the year ended June 30, 1895.

Hospitals, etc.	White.		Colored.		Total
	Male.	Female.	Male.	Female.	
Army Post Hospital.....	2				2
Canal.....	3	1			4
Center Market.....	1	1			2
Childrens' Hospital.....	15	16	7	13	51
Columbia Hospital.....	4	12	6	14	36
Convent of the Visitation (Georgetown).....		2			2
Contagious Disease Hospital.....	1	2	2	1	6
Convalescent Hospital.....					
Emergency Hospital.....	33	3	13	3	52
Epiphany Church Home.....		1			1
Freedmen's Hospital.....	19	1	140	90	250
Fondling Hospital (Fifteenth street).....	11	12			23
Garfield Memorial Hospital.....	32	19	7	7	65
Government Hospital for the Insane.....	120	23	23	13	179
Georgetown University.....	2				2
Home of the Aged (Little Sisters of the Poor).....	13	10	4	11	38
Home for Incurables.....	2	6			8
Homoeopathic Hospital.....	12	10	1	6	29
House of the Good Shepherd.....	1				1
Long Bridge.....	2				2
Methodist Home.....		2			2
United States Naval Hospital.....	7				7
Navy Yard.....	1				1
Potomac River.....	11	1	15		28
Police stations.....	4		1		5
Providence Hospital.....	79	32	7	20	138
Post-Office Department.....	1				1
Soldiers' Home Hospital.....	33		3		36
Sibley Hospital.....	1				1
St. Ann's Infant Asylum.....	26	25	14	11	76
War Department.....	1				1
Washington Asylum Hospital.....	13		41	28	95
Washington Jail.....		1			1
Washington National Home.....			1	1	2
Total.....	448	193	287	219	1,147

TABLE VIII.—Deaths and average ages, year ended June 30, 1895.

WHITE MALES.

Months.	All ages.				5 years and over.				20 years and over.				40 years and over.			
	Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.		
		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.
1894.																
July.....	154	28	4	18	92	47	0	0	78	53	0	0	58	61	8	8
August.....	136	33	0	0	92	48	4	1	82	53	0	0	63	60	0	0
September.....	141	34	10	4	101	48	3	9	89	53	2	13	67	61	1	23
October.....	130	33	9	0	95	44	9	10	86	50	0	0	57	61	9	0
November.....	127	35	10	18	97	46	7	5	86	51	1	12	50	60	6	0
December.....	143	39	8	6	111	50	10	2	194	53	7	15	76	62	0	0
1895.																
January.....	146	38	4	10	110	50	3	5	101	54	2	10	81	60	0	0
February.....	144	46	0	17	114	57	10	13	105	51	1	7	73	60	8	1
March.....	159	42	0	0	125	51	6	16	116	54	8	8	89	63	10	15
April.....	150	39	8	7	118	50	3	10	110	53	1	0	80	62	3	4
May.....	138	41	9	0	105	54	6	8	98	57	8	2	79	64	2	0
June.....	147	40	10	0	111	53	9	9	106	55	9	11	79	64	6	16
Total and mean.....	1,715	37	10	7	1,271	50	4	2	1,161	53	8	2	861	61	19	18

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TABLE VIII.—Deaths and average ages, year ending June 30, 1895—Continued.

WHITE FEMALES.

Months.	All ages.				5 years and over.				20 years and over.				40 years and over.				
	Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.			
		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.	
1894.																	
July.....	148	31	2	15	88	52	0	12	79	56	5	25	61	64	4	10	10
August.....	99	35	6	0	66	52	6	11	61	55	10	7	45	64	5	18	18
September.....	132	28	4	22	84	43	7	2	68	50	5	0	46	61	8	10	10
October.....	116	31	10	0	82	44	6	17	69	51	2	0	50	60	10	2	2
November.....	104	35	6	9	79	46	5	6	68	52	3	17	46	63	0	0	0
December.....	117	39	0	0	94	48	0	11	84	52	9	13	59	62	7	16	16
1895.																	
January.....	124	41	0	11	98	51	8	13	91	54	8	9	70	62	0	0	0
February.....	131	39	4	12	104	49	3	24	95	53	0	9	67	62	6	0	0
March.....	132	40	8	16	99	54	1	0	89	60	0	0	71	65	1	0	0
April.....	125	41	0	0	98	52	0	0	90	55	5	0	66	64	10	11	11
May.....	91	33	0	20	62	48	0	0	56	51	6	6	36	64	3	0	0
June.....	80	32	7	10	50	51	8	3	49	52	4	20	31	65	5	0	0
Total and mean..	1,399	35	9	7	1,024	49	5	0	899	53	10	1	648	63	5	3	3

COLORED MALES.

1894.																
July.....	133	20	0	0	69	37	8	21	57	42	10	0	28	59	2	17
August.....	85	16	6	17	39	35	0	0	24	48	8	0	17	58	0	0
September.....	80	20	10	0	37	44	2	27	32	49	0	0	23	58	0	0
October.....	123	24	5	22	78	38	2	28	65	43	3	21	29	60	0	15
November.....	75	24	3	24	44	41	0	25	37	46	5	15	21	60	0	0
December.....	99	26	5	8	60	43	1	6	54	46	7	10	36	56	1	0
1895.																
January.....	94	25	8	1	58	41	0	14	51	45	0	0	24	62	10	15
February.....	107	27	5	0	66	44	1	8	58	48	6	6	42	60	4	17
March.....	108	28	5	16	65	46	7	6	58	51	0	0	43	59	0	0
April.....	100	30	0	0	69	43	2	3	57	50	0	0	39	58	8	0
May.....	81	27	4	10	49	45	0	0	41	51	3	7	31	60	0	0
June.....	103	23	2	20	56	41	11	4	44	50	0	0	26	63	5	16
Total and mean...	1,188	24	6	22	690	41	9	3	528	47	8	20	359	59	7	21

COLORED FEMALES.

1894.																
July.....	150	21	7	20	81	39	2	15	63	48	1	20	40	59	3	0
August.....	105	20	8	4	58	37	3	0	45	44	3	6	25	58	2	12
September.....	100	24	4	17	60	40	0	0	46	47	8	2	30	57	3	6
October.....	113	24	3	0	74	36	8	0	55	45	0	0	31	59	0	0
November.....	103	26	9	9	79	34	8	11	54	45	3	23	28	61	6	13
December.....	97	34	6	5	75	44	5	10	62	51	3	0	45	60	0	0
1895.																
January.....	84	23	6	8	54	36	3	16	43	41	6	4	26	61	0	0
February.....	93	29	3	18	55	49	0	0	51	51	7	23	34	63	3	16
March.....	116	28	3	3	74	43	9	22	62	50	0	0	38	63	9	14
April.....	110	32	5	20	75	47	2	16	66	52	0	0	47	61	4	25
May.....	97	28	6	2	69	40	0	0	52	48	0	0	33	60	0	0
June.....	95	28	9	21	61	44	5	0	50	51	6	16	35	60	4	24
Total and mean...	1,263	26	11	3	815	41	1	3	649	48	0	10	412	59	7	4

TABLE VIII.—Deaths and average ages, year ending June 30, 1895—Continued.

RECAPITULATION.

Months.	All ages.				5 years and over.				20 years and over.				40 years and over.			
	Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.			Total deaths.	Average ages.		
		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.		Years.	Months.	Days.
White:																
Male	1,715	37	10	7	1,271	50	4	2	1,161	53	8	2	861	61	10	18
Female	1,399	35	9	7	1,024	49	5	0	899	53	10	1	648	63	5	3
Total and mean..	3,114	36	9	22	2,295	49	10	16	2,060	53	9	1	1,509	62	7	26
Colored:																
Male	1,188	24	6	22	690	41	9	3	528	47	8	20	359	59	7	21
Female	1,263	26	11	3	815	41	1	3	649	48	0	10	412	59	7	4
Total and mean..	2,451	25	8	27	1,505	41	5	3	1,177	47	10	15	771	59	7	12
White	3,114	36	9	22	2,295	49	10	16	2,060	53	9	1	1,509	62	7	26
Colored	2,451	25	8	27	1,505	41	5	3	1,177	47	10	15	771	59	7	12
Grand total.....	5,565	31	3	9	3,800	45	7	24	3,237	50	10	23	2,280	61	1	24

TABLE IX.—Cemeteries and number of decedents buried therein, including those transported out of the District of Columbia for interment, for the year ended June 30, 1895.

Cemeteries.	White.	Colored.	Total.
Adas Israel	5	.....	5
Agudas Achim	5	.....	5
Baptist, of Reno .....	.....	11	11
Christian, of Tenley .....	.....	5	5
Congressional Cemetery	491	.....	491
Convent of the Visitation	5	.....	5
Graceland	5	39	44
Glenwood	316	.....	316
Harmony	1	812	813
Hillsdale .....	.....	31	31
Holyrood	101	24	125
Hospital of St. Elizabeth	92	21	113
Jones's Chapel .....	.....	14	14
Macedonia .....	.....	6	6
Museum, Army Medical	4	3	7
Methodist, of Tenley	29	.....	29
Mount Olivet	642	211	853
Mount Zion .....	.....	182	182
Moore's, of Good Hope	3	141	144
National, of Arlington	66	35	101
National, of Soldiers' Home	48	2	50
Oak Hill	170	.....	170
Outside of District	578	224	802
Oxon Hill .....	.....	5	5
Payne's, of Bennings .....	.....	305	305
Potter's field .....	.....	350	429
Prospect Hill	73	.....	73
Rock Creek	125	.....	125
Russian Hebrew, of Oxon Hill	275	.....	275
Smith's, of Anacostia	9	.....	9
St. Mary's .....	.....	5	5
University of Georgetown	54	.....	54
Washington Hebrew, of Oxon Hill	2	.....	2
Woodlawn	15	.....	15
Miscellaneous .....	.....	15	15
Total	3,114	2,451	5,565

TABLE X.—Daily mortality, classified by color; different diseases, violence, and ages;

JULY, 1894.

[illegible]

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1185

also daily meteorological conditions and variations for year ended June 30, 1895.

[Barometer reduced to sea level. T indicates trace of precipitation.]

JULY, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.12	68	82	92	71	21	71	67	S.	S.	161	.....	1
30.01	83	76	82	69	13	72	71	E.	SE.	111	0.01	2
29.95	70	80	91	70	21	71	68	SW.	SW.	134	.....	3
29.93	50	78	88	69	19	66	58	S.	W.	159	.....	4
29.95	57	78	86	69	17	66	60	NW.	SE.	137	.....	5
29.79	84	78	87	69	18	70	68	S.	NE.	118	.22	6
29.94	52	73	79	67	12	60	52	N.	NW.	244	.....	7
30.11	52	68	81	56	25	57	50	SW.	N.	165	.....	8
30.15	55	69	80	58	22	58	50	N.	E.	124	.....	9
30.14	50	68	82	54	28	59	51	N.	SE.	99	.....	10
30.11	63	74	88	59	29	63	60	SE.	S.	97	.....	11
30.06	55	82	95	68	27	66	60	S.	S.	148	.....	12
29.94	52	84	97	71	26	69	62	S.	S.	127	.....	13
29.93	74	82	93	70	23	70	66	S.	N.	121	.05	14
30.04	61	80	90	69	21	69	64	NW.	SE.	96	.....	15
30.07	73	78	89	68	21	71	68	SE.	E.	119	.....	16
30.16	74	78	88	67	21	70	66	N.	S.	120	.....	17
30.17	66	78	90	66	24	69	64	S.	S.	100	.....	18
30.09	70	81	93	69	24	70	66	S.	S.	145	.....	19
29.92	60	84	95	72	23	70	64	S.	S.	157	.....	20
29.78	72	82	90	74	16	70	66	S.	NW.	137	T.	21
29.87	87	68	72	65	7	66	69	N.	NE.	210	.13	22
29.96	95	66	69	63	6	66	66	NE.	NE.	207	.84	23
30.00	85	76	86	66	20	68	66	W.	N.	119	.13	24
30.12	77	79	90	68	22	73	71	SW.	S.	73	.36	25
30.19	68	82	94	70	24	72	69	S.	S.	70	.....	26
30.18	70	84	95	72	23	75	72	S.	S.	90	.....	27
30.08	62	86	96	76	20	74	69	S.	SW.	87	.....	28
30.03	73	84	96	72	24	71	68	SW.	S.	134	.34	29
30.05	77	80	89	70	19	72	70	SW.	W.	97	.06	30
30.05	79	79	87	71	16	69	66	SW.	E.	98	T.	31
30.03	68.0	78.0	88.1	67.7	20.4	68.2	64.1	S.	S.	4,004	2.14	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

AUGUST, 1894.

Day of month.	Color.	Mortality.																												
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.					Group.	Diphtheria.	Diarrheal diseases.	Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Phthisis pulmonalis.	Pneumonia.	Bronchitis.	Congestion of lungs.	Pleurisy.	Diseases of nervous system.	Diseases of the circulatory organs.	Rheumatism.	Diseases of digestive organs.	All other diseases.	Total deaths by color.	Total deaths.		
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.	Scarlet fever.																				
1.....	W. C.	10	1			3	3							1	1									1		3	4	11	20	
2.....	W. C.	9	6	2		1	1							1	1									1		1	4	8	15	
3.....	W. C.	6	6	1		1	3									1							2		1	1	4	7	16	
4.....	W. C.	7	1			5	2							2	2								1		1	1	6	6	12	
5.....	W. C.	6				1	2									1			1				2		2	1	6	6	12	
6.....	W. C.	13				6	3						1	1	1		1	1	1			3		1		3	1	13	16	
7.....	W. C.	3					1							1	1				1							1	1	5	7	
8.....	W. C.	2				1	2						1	1	1		1	1	1			1		2		1	3	11	13	
9.....	W. C.	9	2			1	1							2	2							1				1	2	5	11	
10.....	W. C.	4	1			1	3						1	1	1		1	1	1			1				1	2	5	11	
11.....	W. C.	13				4	3						1	1	1		1	1	1			3				1	1	5	21	
12.....	W. C.	8					3						2	2	2									2		2	2	6	12	
13.....	W. C.	6					2						1	1	1		1	1	1								3	6	15	
14.....	W. C.	8	1			2	2						1	1	1				1			3		1		1	3	6	16	
15.....	W. C.	7	1			2	2						1	1	1				1			3				1	3	8	16	
16.....	W. C.	6					1						1	1	1											1	1	2	9	15
17.....	W. C.	9				1	1						1	1	1				1			1				1	2	10	15	
18.....	W. C.	10				1	4						3	1	1		3	1	1			2		1	1	1	1	5	10	15
19.....	W. C.	5				1	3						1	1	1		1	1	1			1				1	1	3	6	11
20.....	W. C.	6					1						1	1	1		1	1	1			1				1	1	8	18	
21.....	W. C.	8					2						3	5	5		1	1	1					2		2	3	10	11	18
22.....	W. C.	10					1						2	1	1		1	1	1			1				1	2	6	5	11
23.....	W. C.	6					2						3	5	1		1	1	1							1	2	5	6	11
24.....	W. C.	5					3						1	1	1		1	1	1							1	2	5	8	8
25.....	W. C.	4	1			1	2						2	3	2		3	1	1			1				2	1	2	7	13
26.....	W. C.	3					1						1	1	1		1	1	1			2				3	1	12	6	18
27.....	W. C.	12					1						2	3	1		2	2	2			2				3	1	12	6	18
28.....	W. C.	6					3						3	3	3		1	1	1			1				1	1	4	5	9
29.....	W. C.	4					2						2	3	1		1	1	1			1				1	1	10	16	16
30.....	W. C.	10					3						2	1	1		1	1	1			1				2	1	1	6	12
31.....	W. C.	6					2						3	3	2		1	2	1			4				1	1	4	6	12
1.....	W. C.	6					1						1	1	1		1	1	1							1	1	3	8	13
2.....	W. C.	8					2						1	1	1		1	1	1							1	1	3	5	11
3.....	W. C.	5					3						2	2	2		1	1	1			1				1	1	5	10	19
4.....	W. C.	9	1			1	2						1	1	1		1	1	1			2		1		1	1	1	7	14
Total and mean.	W. C.	224	9	0	2	60	75	5	3	0	1	12	16	16	1	4	16	5	3	0	0	33	6	0	0	39	73	235	425	
	C.	185	3	1	1	18	92	14	9	0	0	6	35	14	1	4	22	6	5	0	0	33	14	12	0	15	51	190		

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

AUGUST, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
29.98	74	80	91	68	23	72	68	S.	S.	86	T.	1
29.88	79	80	89	71	18	72	70	SE.	SW.	117	T.	2
29.87	78	80	88	72	16	72	70	NW.	SW.	117	0.01	3
30.10	70	70	77	64	13	61	58	NW.	N.	147	.50	4
30.21	62	71	78	64	14	60	55	NE.	NE.	96	.....	5
30.18	66	70	82	58	24	64	58	NE.	SE.	84	.....	6
30.10	72	71	84	58	26	66	62	SE.	S.	108	.....	7
30.01	70	79	92	66	26	70	66	S.	S.	82	.....	8
29.94	61	83	92	74	18	69	64	S.	0	83	T.	9
30.09	72	70	74	66	8	62	58	N.	E.	137	.23	10
30.16	66	71	81	61	20	63	59	NE.	S.	136	T.	11
30.03	92	68	69	66	3	66	66	S.	E.	145	.28	12
30.00	92	69	74	64	10	67	66	NE.	NE.	73	.06	13
30.07	86	74	84	64	20	68	68	N.	S.	84	.....	14
29.91	72	80	90	69	21	69	66	S.	S.	148	.01	15
29.95	68	74	81	66	15	62	58	NW.	N.	144	.....	16
30.06	65	72	83	62	21	63	58	N.	E.	81	.....	17
30.03	77	76	86	67	19	68	66	S.	S.	146	.....	18
29.95	74	75	88	62	26	67	64	S.	SW.	103	T.	19
29.96	80	74	82	65	17	66	64	NW.	0.	133	.05	20
30.10	66	70	78	62	16	61	56	N.	NE.	114	T.	21
30.18	63	68	81	54	27	59	54	NE.	0.	79	.....	22
30.20	69	70	86	55	31	64	60	W.	SE.	85	.....	23
30.16	78	73	85	61	24	66	64	SE.	S.	92	.....	24
30.03	78	79	88	70	18	71	69	S.	E.	92	.....	25
29.98	86	78	88	69	19	69	68	SE.	NE.	78	.86	26
30.05	88	71	75	67	8	68	67	NE.	NE.	121	T.	27
30.04	84	74	83	65	18	69	68	NE.	S.	76	.....	28
30.03	88	72	80	65	15	68	67	SW.	NE.	65	.....	29
29.95	80	78	89	68	21	68	66	SE.	NE.	107	.....	30
30.07	80	72	81	64	17	64	62	W.	N.	60	.....	31
30.04	75.5	73.9	83.2	64.7	18.5	66.2	63.4	S.	S.	3,219	2.00	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

SEPTEMBER, 1894.

Day of month.	Color.	Mortality.																	Total deaths.										
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.											Total deaths, by color.												
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.	Scarlet fever.	Croup.	Diphtheria.	Diarrheal diseases.	Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Phthisis pulmonalis.	Pneumonia.	Bronchitis.	Congestion of lungs.	Pleurisy.	Diseases of nervous system.	Diseases of the circulatory organs.	Rheumatism.	Diseases of digestive organs.	All other diseases.			
1	W.	3	1					1																				10	
1	C.	6				1		1																				6	
2	W.	6	1					3				1										1						12	
2	C.	5						2						1														7	
3	W.	7						4																				4	
3	C.	4						3																				7	
4	W.	10			1	5	3	3	1	1				1								1	2				11	14	
4	C.	3					2	2				1										2					3		
5	W.	7	1				2	3																				8	
5	C.	6	1				2	2														2	1				5	7	
6	W.	5				1	1	1				1		2									1				7		
6	C.	2					2	2																				2	
7	W.	9				4	1	1						3													9	16	
7	C.	7				1	2	1					1									2	2				7		
8	W.	5	1			1	3	3												1							6	10	
8	C.	4					3	3																				4	
9	W.	15				1	3	1	1				2	4	1						1	3	2				15	21	
9	C.	6				1	1	1														1					6		
10	W.	7				1	1	1						1								2	1				7	13	
10	C.	6					6	1					3														6		
11	W.	9				2	4	1						1								1	4				9	13	
11	C.	3	1				1									1	1					2					4	9	
12	W.	4				3																							
12	C.	5				1	1	1																			5		
13	W.	9				5	1	1					2	3						1							11		
13	C.	2				1	1	1																			2		
14	W.	4		1		1	4	4													2	1					10	15	
14	C.	4				2	2	2																			2		
15	W.	12				3	3	3						1													12	19	
15	C.	7				4	4	2	1			1									2						7		
16	W.	8	1			3	3							2	1												9	14	
16	C.	5				3	3																				5		
17	W.	10	7			3	4	4																			17	25	
17	C.	8				1	2	3						1													8		
18	W.	7				2	3																				7	10	
18	C.	3				1	1							2													3		
19	W.	11				4	5	1	1																		11	16	
19	C.	5				3	3							2	1												5	9	
20	W.	5				1	1																				5		
20	C.	4				2	2	2				1															4		
21	W.	9				3	1																				9	15	
21	C.	6				3	3																				6		
22	W.	8	1			4	4	2	1																		9	14	
22	C.	5				3	2	5						1													5		
23	W.	13				1	3	5						1													13	25	
23	C.	12				1	3	5						1													12		
24	W.	7				1	1																				7	13	
24	C.	5	1			1	3									2											5		
25	W.	7				1	2																				7	12	
25	C.	5				2	2							1													5		
26	W.	9	1		1	1	4	1	1					3													11	20	
26	C.	9				6	3	1																			9		
27	W.	13				4	3							1	1												13	21	
27	C.	8				3	3				1			1	1												8		
28	W.	10				2	4	1	1																		10	19	
28	C.	9				1	3							1													9		
29	W.	9				1	3	2																			9	23	
29	C.	14				4	5																				14		
30	W.	13				4	5																				13	21	
30	C.	8				3	3	1	1					1	1												8		
Total and mean.	W.	256	14	1	2	57	86	6	5	0	12	21	20	26	20	3	22	4	1	3	3	35	18	29	25	273	453		
	C.	176	4	0	0	19	82	10	3	0	0	4	6	6	4	0	20	6	3	1	1	25	16	0	14	180			

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1189

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

SEPTEMBER, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.18	76	70	83	58	25	64	59	0	SE.	61	.....	1
30.15	87	72	84	59	25	65	64	SE.	SE.	56	.....	2
30.18	86	73	84	62	22	68	66	SE.	SE.	90	.....	3
30.21	86	73	79	67	12	69	68	NE.	N.	89	.....	4
30.13	84	77	86	68	18	72	70	E.	SW.	103	.....	5
30.08	80	76	87	66	21	70	68	SW.	NE.	76	.....	6
30.06	80	78	84	72	12	71	68	E.	SE.	118	T.	7
30.03	88	82	90	73	17	74	72	S.	NW.	145	0.05	8
30.00	74	84	94	74	20	75	72	N.	S.	88	.....	9
29.86	67	84	95	74	21	72	68	N.	NW.	181	T.	10
30.16	49	70	75	64	11	55	46	N.	NE.	170	.02	11
30.41	60	63	73	53	20	58	52	NE.	SE.	114	.....	12
30.50	69	71	78	64	14	62	58	NE.	E.	116	.....	13
30.39	77	72	82	61	21	66	64	NE.	S.	118	.....	14
30.18	75	78	88	67	21	68	66	SW.	S.	140	T.	15
30.11	75	80	92	68	24	68	65	S.	NE.	119	T.	16
30.10	83	76	83	68	15	70	68	N.	S.	93	.11	17
29.96	92	71	74	68	6	68	68	S.	S.	91	.06	18
29.78	90	68	72	65	7	65	64	E.	NW.	102	1.05	19
29.86	74	68	77	60	17	61	57	SW.	W.	159	.07	20
30.07	78	69	83	55	28	60	57	W.	SW.	62	.....	21
30.11	84	70	83	56	27	62	59	0	S.	65	.....	22
30.02	78	70	85	55	30	64	62	0	SW.	97	.....	23
30.18	57	66	72	60	12	54	47	NW.	N.	185	.....	24
30.38	63	58	66	51	15	48	42	NW.	N.	136	.....	25
30.35	66	54	61	47	14	48	43	NE.	N.	210	.....	26
30.00	86	63	67	59	8	60	68	NE.	NE.	323	.12	27
29.94	86	67	71	63	8	64	61	NE.	NE.	338	.01	28
29.90	90	68	73	64	9	66	65	NE.	NE.	250	.04	29
29.93	76	72	80	65	15	62	60	N.	NE.	171	.....	30
30.11	76.9	71.4	80.0	62.9	17.2	64.2	61.2	NE.	NE.	4,066	1.53	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

OCTOBER, 1894.

[illegible]

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

OCTOBER, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.04	69	66	74	58	16	54	50	NW.	W.	121	.....	1
29.94	82	66	81	50	31	61	58	E.	S.	58	.....	2
29.85	76	72	84	59	25	67	64	SW.	S.	222	.....	3
29.84	87	68	73	63	10	62	60	0	S.	125	0.06	4
29.88	68	62	69	55	14	50	46	NW.	NW.	168	.01	5
30.20	67	56	64	49	15	47	42	NW.	N.	141	.....	6
30.30	68	55	69	41	28	48	44	0	SE.	69	.....	7
30.02	81	58	70	47	23	55	52	0	S.	131	T.	8
29.84	73	52	55	50	5	48	43	N.	NE.	210	.08	9
29.62	70	56	66	47	19	48	43	NW.	NW.	337	1.70	10
30.15	60	56	65	47	18	45	38	SW.	N.	231	.....	11
30.31	73	52	66	38	28	46	42	W.	S.	103	.....	12
29.92	79	58	61	54	7	51	47	S.	NW.	199	.19	13
29.99	49	48	53	43	10	40	29	NW.	NW.	248	.02	14
30.28	65	46	56	37	19	37	30	W.	NW.	149	.....	15
29.92	64	52	69	36	33	46	40	SW.	SW.	150	.....	16
29.72	50	66	82	51	31	52	42	SE.	NW.	243	.....	17
30.14	68	56	68	43	25	46	40	W.	NW.	110	.....	18
30.19	74	56	71	41	31	50	46	0	SE.	124	.....	19
30.14	93	58	74	42	32	51	50	0	N.	88	.....	20
30.13	93	62	75	48	27	54	53	N.	N.	81	.....	21
30.24	88	60	64	56	8	56	55	NE.	NE.	148	.....	22
30.30	82	59	62	56	6	54	52	N.	NE.	107	.....	23
30.12	90	60	66	54	12	53	52	SE.	N.	141	.08	24
30.08	89	52	56	49	7	50	56	N.	NW.	188	T.	25
29.90	88	56	66	46	20	50	48	W.	NE.	102	.....	26
30.00	81	56	60	53	7	52	49	NE.	N.	149	.....	27
29.98	84	56	60	52	8	52	50	N.	N.	217	.13	28
30.02	94	57	60	54	6	56	55	NW.	N.	111	.02	29
30.04	88	60	63	56	7	56	54	E.	E.	199	.....	30
29.83	74	56	63	49	14	50	45	SE.	W.	259	.85	31
30.03	76.2	57.8	66.6	49.2	17.5	51.2	47.6	NW.	NW.	4.929	3.14	

1192 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

NOVEMBER, 1894.

Day of month.	Color.	Mortality.																																											
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.										Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Pithitis pulmonalis.	Pneumonia.	Bronchitis.	Congestion of lungs.	Pleurisy.	Diseases of nervous system.	Diseases of the circulatory organs.	Rheumatism.	Diseases of digestive organs.	All other diseases.	Total deaths, by color.	Total deaths.															
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.	Scarlet fever.	Croup.	Diphtheria.	Diarrheal diseases.	Typhoid fever.																															
1.....	W.	6			1	2	1					1						2							1					16															
	C.	9				4			1	1		1	1					1	1						1	1	1	3	7	9															
2.....	W.	9												1				2																											
	C.	6					4																																						
3.....	W.	3					3		2	1		1						1																											
	C.	7					1							1				1																											
4.....	W.	14				3	7		3			1	1	1				1	1			1																							
	C.	5				1	2		1									1																											
5.....	W.	10				1	3				1							1	1			1																							
	C.	7				4								2				2	2																										
6.....	W.	5				1	1		1	1								2				1			1	1	4	7	5	11															
	C.	5				2								1				1			1		1			1	1	7	2	9															
7.....	W.	5				2												1																											
	C.	1												1																															
8.....	W.	7				1	4		2	2			1		1			2	1		1						4	7	4																
	C.	4				1	1											2	1																										
9.....	W.	6		1		3	1		1			1						2	1							3	3	7	6	13															
	C.	6					1							1				1	1																										
10.....	W.	11		1		1	5				1		1		1			1	1		1			3		1	3	12	6	18															
	C.	5		1			2											1	1																										
11.....	W.	10				3	2		1	1				2				1	1		1			3		1	2	10	3	13															
	C.	3																1	1																										
12.....	W.	5				2	2		2			1						1	1		1					1	1	1	5	12															
	C.	7				1												1	1																										
13.....	W.	9				2	1					1		2				1	3		1					1	2	9	7	16															
	C.	7				1												1	1																										
14.....	W.	6				1	2		1			1						1	1		1					5	4	6	8	14															
	C.	8				2	1		1		1							2	2																										
15.....	W.	9				2	5		1					1				1	1		1					4	4	9	8	17															
	C.	8				1	2											1	1		1																								
16.....	W.	9				3	1		4		1		1	1				1	1		1			1		2	4	10	9	19															
	C.	9				1	3		1	1								1	1																										
17.....	W.	10				3	2		1		1							2	1					2		1	2	11	5	16															
	C.	5					1											1																											
18.....	W.	6				2	2												1								2	2	6	5	11														
	C.	5										1																																	
19.....	W.	6		1		1	1											4	1							1	2	1	3	10	17														
	C.	1																1	1																										
20.....	W.	7		1		3	1		2					1				1	1		1					3	3	7	3	10															
	C.	3							1	1																																			
21.....	W.	3																																											
	C.	1				1								1																															
22.....	W.	6				1	5		1									1	1		2					1	2	1	4	14															
	C.	7				3	1		2									1	1																										
23.....	W.	8				5												1	2																										
	C.	3		1			1							1				1	1		2																								
24.....	W.	5				1	1											1	1		2																								
	C.	3																																											
25.....	W.	9		1		1	2		1									2	1				3		1		2	10	9	19															
	C.	9												1																															
26.....	W.	10				1	3											1	1		1																								
	C.	6		1										1	3																														
27.....	W.	5				1	4											1	1		1																								
	C.	5										2																																	
28.....	W.	5				1	1		1									1	1																										
	C.	5				2												1	1																										
29.....	W.	4				1	1											1	1																										
	C.	6							1																																				
30.....	W.	9		2			1		1	1								2																											
	C.	3					1																																						
Total and mean.	W.	218	10	0	3	53	55	14	10	4	1	12	14	20	1	2	1	25	6	6	2	2	22	22	4	12	75	231	409																
	C.	172	4	1	1	23	54	11	5	1	1	3	5	4	2	3	2	27	21	3	4	0	8	4	15	47	178																		

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

NOVEMBER, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (expose dbulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.19	66	52	66	39	27	46	40	S.	S.	108	.....	1
30.20	80	56	68	44	24	50	48	NE.	E.	158	.....	2
29.89	82	55	62	48	14	48	44	NW.	NW.	344	0.64	3
30.00	78	50	59	41	18	42	38	SW.	S.	102	.....	4
29.77	78	46	50	41	9	43	39	W.	NW.	282	.20	5
30.03	63	42	46	39	7	36	30	NW.	W.	269	.....	6
30.13	58	40	46	34	12	36	28	W.	S.	143	.....	7
30.00	85	46	50	43	7	43	41	SW.	N.	74	.23	8
29.99	79	46	51	42	9	40	37	NW.	E.	124	.09	9
29.94	64	42	48	37	11	35	29	W.	W.	206	T.	10
30.14	54	38	42	33	9	30	22	W.	NW.	195	.....	11
30.34	54	34	42	27	15	28	19	W.	SE.	119	.....	12
30.14	55	42	50	34	16	36	28	S.	S.	246	.....	13
30.04	72	45	49	41	8	38	34	S.	NW.	241	T.	14
30.13	69	44	56	31	25	39	33	S.	S.	203	.....	15
30.04	68	54	64	45	19	44	38	S.	S.	150	.....	16
30.02	88	54	63	46	17	49	48	S.	N.	173	.04	17
30.11	64	42	44	41	3	37	30	NE.	NE.	134	.01	18
30.22	71	44	50	37	13	36	31	S.	N.	192	.....	19
30.57	59	33	42	24	18	29	22	N.	SE.	127	.....	20
30.22	94	44	55	32	23	40	40	N.	S.	63	.17	21
30.29	83	48	62	34	28	40	38	0	SE.	92	.....	22
30.14	84	56	67	45	22	50	47	S.	NW.	170	.12	23
30.10	58	42	50	35	15	35	26	NW.	NW.	172	.....	24
30.14	48	39	42	36	6	31	20	W.	NW.	452	.....	25
30.22	58	36	43	30	13	30	22	NW.	S	218	.....	26
29.86	54	48	60	37	23	42	34	S.	SW.	212	.....	27
30.40	44	33	36	30	6	26	14	NW.	NW.	395	.....	28
30.74	60	30	39	21	18	24	17	NW.	E.	106	.....	29
30.51	80	34	39	28	11	34	30	S.	S.	115	.02	30
30.16	68.3	43.8	51.4	36.5	14.9	37.9	32.1	S.	S.	5,585	1.52	

1194 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

DECEMBER, 1894.

Day of month.	Color.	Mortality.																												
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.					Scarlet fever.	Croup.	Diphtheria.	Diarrheal diseases.	Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Phtisis pulmonalis.	Pneumonia.	Bronchitis.										
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.																					
1	W.	10			1	3	3	1					2					2												
	C.	8				1	1																							
	W.	7		1		1	2							1				1												
2	C.	6				1	4																							
	W.	8				3	2						2																	
	C.	6	1			1	1																							
3	W.	10		1		3	2										1	1	1											
	C.	4	1			1	1						1				2	1	1											
4	W.	4	1						1	1																				
	C.	4	1																											
5	W.	5				1	1										2													
	C.	9	2			3	3		1						1			1	1											
6	W.	4					2		1						2															
	C.	4					2		1						1															
7	W.	4	1			2	1												3											
	C.	1																												
8	W.	13				4	4		1				2																	
	C.	12				2	4		2																					
9	W.	10				4	3						2																	
	C.	5				1	1																							
10	W.	5				1	1		1						1															
	C.	4				1	1		1																					
11	W.	8				2	1						2																	
	C.	2				1	1																							
12	W.	7	2			2	1								1															
	C.	2																												
13	W.	8	1			3	1																							
	C.	8				5																								
14	W.	6				2	2		1	1			1																	
	C.	7				2	2																							
15	W.	8				1	1								1															
	C.	9				3	2																							
16	W.	6				2	2		1	1																				
	C.	3																												
17	W.	11				3	2																							
	C.	3				2																								
18	W.	7	1			1	1																							
	C.	4				2	2																							
19	W.	13		1		7	2							1	1															
	C.	4	1			2	1		1																					
20	W.	4	1			2	4		1	1																				
	C.	8				2	2																							
21	W.	12				4	3																							
	C.	13				3	5																							
22	W.	7		1		1	1																							
	C.	8				3	3																							
23	W.	8			1	2	2		1	1					1															
	C.	7				2	1					1																		
24	W.	4	2			2	1																							
	C.	6				1																								
25	W.	9				3	2																							
	C.	10				2	3						1																	
26	W.	10				2	3																							
	C.	4											1																	
27	W.	7				1	3																							
	C.	10				1	4																							
28	W.	7	1			1	2		1						1	2														
	C.	9				3	1																							
29	W.	7				3	1																							
	C.	6																												
30	W.	8				1	3		1																					
	C.	4																												
31	W.	5	1			3	1																							
	C.	11				1	4																							
Total and mean.	W.	242	13	1	5	70	55	11	7																					
	C.	193	3	0	0	29	61	12	7	0	1	0	1	14	4	9	0	1	3	26										
														2	7	1	3	38	25	456										

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

DECEMBER, 1894.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.26	88	42	48	36	12	39	37	NE.	NE.	90	T.	1
30.04	77	44	50	39	11	40	36	N. E.	NW.	160	0.02	2
30.28	66	39	45	33	12	31	25	NW.	NW.	133	.....	3
30.09	81	39	49	29	20	33	30	S.	NW.	73	.....	4
30.22	81	34	44	24	20	27	24	0	NW.	68	.....	5
30.21	74	38	52	24	28	28	23	SW.	NW.	61	.....	6
30.18	72	40	53	26	27	33	28	0	SE.	74	.....	7
29.93	96	44	47	40	7	43	42	S.	S.	85	.49	8
29.95	94	44	47	40	7	42	41	NE.	N.	86	.01	9
30.11	90	36	45	30	15	36	35	N.	NE.	171	.37	10
30.19	96	42	44	41	3	42	41	NE.	N.	181	.28	11
29.98	92	46	51	41	10	45	43	E.	W.	111	1.19	12
30.14	64	44	48	41	7	38	31	W.	NW.	366	.....	13
30.19	63	44	49	38	11	36	29	NW.	W.	206	.....	14
30.20	78	43	57	29	28	34	30	0	S.	65	.....	15
30.07	70	45	60	30	30	40	34	S.	S.	159	T.	16
30.24	65	45	52	38	14	39	34	W.	N.	210	.08	17
30.43	68	36	42	31	11	30	24	N.	N.	135	.....	18
30.22	77	40	48	31	17	31	27	0	NE.	54	.....	19
30.35	80	40	52	27	25	31	28	0	NW.	58	.....	20
30.33	73	40	55	26	29	33	28	0	S.	70	.....	21
30.21	74	45	54	36	18	37	32	W.	NW.	202	T.	22
30.43	69	34	40	27	13	28	22	N.	E.	118	.....	23
30.28	83	32	42	21	21	29	26	N.	S.	125	T.	
30.07	68	44	49	38	11	37	31	S.	N.	180	.12	25
30.18	86	28	21	25	6	29	26	NE.	NE.	211	.42	26
29.83	70	29	34	24	10	23	18	NW.	NW.	384	1.16	26
30.25	48	17	19	15	4	12	2	NW.	NW.	265	.....	28
30.29	47	14	21	6	15	11	-1	W.	S.	277	.....	29
30.21	80	22	33	12	21	22	18	S.	SW.	100	T.	30
30.23	68	28	32	25	7	24	17	NW.	NW.	154	.01	31
30.18	75.4	37.4	44.9	29.8	15.12	32.3	27.8	NW.	NW.	4,632	4.15	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

JANUARY, 1895.

[illegible]

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1197

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

JANUARY, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.28	68	24	32	16	16	18	12	N.	NW.	121	.....	1
30.35	86	22	32	13	19	21	18	W.	S.	61	T.	2
30.17	88	28	30	25	5	26	24	N.	SW.	80	0.06	3
30.30	68	28	33	24	9	22	16	SW.	NW.	203	T.	4
30.43	71	19	27	11	16	17	12	N.	SE.	136	.....	5
30.06	88	36	46	25	21	38	36	S.	SE.	196	.12	6
30.10	80	53	62	44	18	49	46	S.	SW.	275	T.	7
30.32	92	41	48	34	14	40	38	N.	NW.	168	.28	8
30.43	97	30	32	28	4	30	30	N.	NE.	212	.49	9
29.95	100	40	50	31	19	42	42	NE.	S.	276	.58	10
29.88	80	44	48	40	8	37	34	SW.	S.	185	.03	11
29.76	84	38	48	27	21	34	31	NE.	NE.	156	T.	12
29.80	69	9	14	4	10	8	2	W.	SW.	295	.12	13
30.10	68	24	34	14	20	20	14	S.	W.	133	.....	14
30.17	66	34	45	24	21	31	26	S.	S.	122	T.	15
30.00	94	36	38	35	3	35	34	NW.	N.	120	.81	16
30.18	59	36	44	29	15	30	22	NW.	NW.	171	.....	17
30.12	80	30	37	23	14	29	26	W.	SE.	106	.....	18
30.11	61	40	48	31	17	34	27	NW.	N.	230	T.	19
30.31	83	30	39	21	18	28	26	N.	SE.	109	.....	20
29.75	90	40	52	29	23	41	39	NE.	S.	135	.02	21
29.64	50	39	43	35	8	33	22	W.	SW.	203	.....	22
29.77	57	34	41	28	13	26	18	S.	NW.	204	.....	23
30.09	58	26	32	20	12	21	12	W.	NW.	148	.....	24
30.19	92	22	29	15	14	21	20	N.	NE.	171	.10	25
29.58	73	34	42	26	16	30	25	W.	NW.	190	1.25	26
30.19	51	33	38	28	10	22	16	SW.	W.	243	.....	27
30.20	80	32	37	28	9	26	23	0	NE.	94	.29	28
29.97	90	26	31	21	10	23	21	N.	S.	98	.27	29
30.08	94	26	34	19	15	27	26	N.	NW.	58	T.	30
30.27	70	25	31	19	12	20	16	N.	NW.	122	.....	31
30.08	77.0	31.6	38.6	24.7	13.9	28.6	24.4	N.	NW.	5,021	4.42	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

FEBRUARY, 1895.

[illegible]

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1199

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

FEBRUARY, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.32	82	24	40	9	31	21	18	0	NW.	54	.....	1
30.20	75	30	33	26	7	26	20	N.	NW.	175	0.30	2
30.34	71	12	25	0	25	10	5	N.	N.	103	.....	3
30.12	64	25	32	18	14	16	9	NW.	N.	233	.....	4
30.32	56	10	17	4	13	8	-2	NW.	NW.	240	.....	5
30.22	54	6	10	1	9	4	-6	NW.	N.	159	T.	6
29.66	92	8	10	7	3	7	6	NE.	NW.	305	.45	7
29.63	60	6	12	0	12	4	-6	NW.	SW.	651	.14	8
29.98	56	10	15	5	10	8	-2	W.	W.	618	.....	9
30.22	50	18	24	13	11	14	2	NW.	NW.	389	.....	10
30.20	60	18	24	13	11	14	6	NW.	NW.	214	.....	11
29.86	81	20	28	11	17	19	16	N.	NW.	103	.02	12
29.84	68	22	26	18	8	16	10	NW.	W.	389	.12	13
30.26	58	24	32	16	16	19	11	W.	W.	270	.....	14
30.42	60	28	37	20	17	23	15	0	NW.	101	.....	15
30.04	76	28	34	22	12	26	22	SW.	S.	70	T.	16
29.96	48	36	44	29	15	26	16	NW.	NW.	139	.....	17
29.90	66	30	44	17	27	26	20	W.	S.	69	.....	18
29.89	68	37	48	26	22	31	26	W.	S.	83	.....	19
29.92	58	34	41	26	15	28	20	W.	S.	151	.....	20
29.66	51	41	50	32	18	34	24	SW.	W.	285	.....	21
30.05	48	32	35	30	5	26	15	NW.	NW.	279	.....	22
30.30	54	30	38	21	17	24	15	S.	NW.	159	T.	23
30.52	60	28	38	18	20	23	16	N.	S.	114	.....	24
30.14	53	43	58	28	30	36	26	S.	NW.	181	.....	25
30.34	55	38	41	34	7	30	20	NW.	NW.	374	.....	26
30.18	54	42	56	28	28	35	26	S.	W.	177	.....	27
29.68	75	54	67	41	26	44	40	S.	W.	141	.07	28
30.08	62.8	26.2	34.2	18.3	15.9	21.4	14.0	NW.	NW.	6,226	1.10	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

MARCH, 1895.

Day of month.	Color.	Mortality.																											
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.					Diphtheria.	Diarrheal diseases.	Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Phthisis pulmonalis.	Pneumonia.	Bronchitis.	Congestion of lungs.	Pleurisy.	Diseases of nervous system.	Diseases of the circulatory organs.	Rheumatism.	Diseases of digestive organs.	All other diseases.	Total deaths, by color.	Total deaths.		
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.	Scarlet fever.																		Croup.	
1.	W. C. W.	17	1	6	7	2	1	1						2	1			3		1	3	7	18	27			
2.	W. C. W.	19	...	1		5	7	1	1			1				1	3			3			1	4	16	23			
3.	W. C. W.	7	6			2	2	3	3						1	1	1						2	6	7				
4.	W. C. W.	8	6	1		3	5	2	2	1	1				2	2	3		1	1		1	7	11	14				
5.	W. C. W.	8	5			1	1	1	1						1	1	1		1			1	3	8	18				
6.	W. C. W.	12	4			3	3	2	2	2	2				1	5	2		2		1	1	3	5	13				
7.	W. C. W.	11	4			7	7	2	2	2	2				1	2	1		3		3	2	4	12	16				
8.	W. C. W.	5	1			1	1	3	2	2	2			1	1	1	1		1			1	3	5	16				
9.	W. C. W.	9	5	1		1	5	2	2	1	1				1	1	1		1		2	2	6	11	20				
10.	W. C. W.	11	3	1		2	2	5							1	1	1		2			1	1	4	10				
11.	W. C. W.	6	1			1	1	1	5	1	1				1	1	1		2		2	1	6	11	18				
12.	W. C. W.	7	1			5	1	1	1	3	1				2	2	2		2		2	1	3	2	16				
13.	W. C. W.	7	1			1	1	3							1	1	1		2		2	3	4	8	6				
14.	W. C. W.	3	3												1	1	1					1	1	5	15				
15.	W. C. W.	4	1				5								2	2	2		1			1	3	8	17				
16.	W. C. W.	10	8			1	1	4	4	1	1				1	1	1		2		1	1	4	9	17				
17.	W. C. W.	9	7			2	2	3	3	4	1				1	1	1		2		1	1	3	7	17				
18.	W. C. W.	7	7			2	2	4	4						1	1	2		3		2	1	5	10	24				
19.	W. C. W.	19	2			6	4	2							1	3	2		3			1	3	8	15				
20.	W. C. W.	5	7	1		1	1	2							3	1	1		1		2	3	5	7	14				
21.	W. C. W.	7	7			1	1	1							2	2	2		1		1	2	7	16	24				
22.	W. C. W.	7	7			3	3	1	1	1					1	1	2		2		3	3	4	8	15				
23.	W. C. W.	15	1			7	2	1	1	1					2	2	2		1		3	3	11	7	16				
24.	W. C. W.	8	4			2	1								2	2	2		2		2	2	4	7	10				
25.	W. C. W.	10	1			3	4								1	1	2		2		1	1	1	9	18				
26.	W. C. W.	6	1			3	1	1							1	1	1		1		1	2	11	7	18				
27.	W. C. W.	9	1			1	1	4							2	2	2		1		3	3	15	2	17				
28.	W. C. W.	14	2			2	1	1	2						1	1	3		2		1	2	4	12	20				
29.	W. C. W.	10	7	2		4	2	3	3	1	1				1	1	1		2		1	1	13	7	17				
30.	W. C. W.	7	5			1	1	1	2						1	1	1		1		1	2	5	5	13				
31.	W. C. W.	11	8	1		2	5	2	1	1						2	2		1		2	4	8	9	13				
	W. C. W.	4	8			2	5	2	1						4	1	2		1		1	1	5	8	13				
	W. C. W.	9	4			1	1								1	1	1		1		1	2	2	6	14				
	W. C. W.	6	8			3	1	1							2	2	2		2			3	3	8	14				
Total and mean.	W. C.	275 220	13 4	0 3	0 3	99 42	67 85	14 10	8 6	0 0	2 1	1 1	1 5	4 2	0 0	3 3	19 36	40 35	9 9	6 1	5 1	40 24	25 17	0 6	21 18	99 86	291 224	515	

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1201

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

MARCH, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
29.56	58	61	74	48	26	51	44	S.	W.	138	.....	1
29.82	93	36	38	35	3	36	35	NW.	N.	246	0.83	2
29.98	55	41	50	32	18	35	24	N.	S.	157	.....	3
29.86	68	46	55	37	18	39	32	S.	W.	343	.01	4
30.36	54	30	38	22	16	24	15	N.	N.	235	.....	5
30.37	58	42	58	27	31	39	26	S.	S.	220	.....	6
30.05	92	44	55	32	23	42	40	S.	S.	68	.06	7
29.67	84	47	54	40	14	42	40	NW.	SE.	126	.35	8
29.86	46	38	45	30	15	30	19	NW.	S.	405	.17	9
30.06	50	52	65	39	26	41	30	S.	S.	158	.....	10
30.15	92	36	41	31	10	35	34	NE.	NE.	229	.22	11
30.17	96	35	40	30	10	35	34	N.	NE.	92	T.	12
29.95	90	44	50	38	12	42	41	NE.	N.	114	.47	13
30.13	66	43	46	40	6	38	32	NW.	N.	254	.04	14
30.00	92	31	34	28	6	30	28	NE.	NE.	149	.22	15
29.91	71	34	39	30	9	29	24	NW.	W.	326	.07	16
30.12	45	34	42	27	15	27	16	W.	W.	344	.....	17
30.02	53	43	53	33	20	36	27	SW.	NW.	345	.....	18
30.10	39	44	51	36	15	32	19	NW.	N.	209	.....	19
29.98	51	36	38	33	5	30	22	NE.	N.	222	T.	20
30.11	40	38	46	31	15	30	16	N.	NW.	245	.....	21
30.37	46	36	45	27	18	28	17	NW.	N.	204	.....	22
30.53	55	38	52	25	27	33	24	O.	SE.	121	.....	23
30.36	72	42	50	35	15	38	34	S.	S.	185	.11	24
29.98	54	54	68	40	28	43	32	S.	NW.	218	.01	25
29.98	34	46	52	39	13	34	16	W.	NW.	324	T.	26
29.94	49	45	58	32	26	36	26	S.	S.	266	.....	27
29.85	36	45	48	42	6	35	20	NW.	NW.	469	T.	28
30.06	50	44	56	31	25	34	24	N.	SE.	164	.....	29
30.10	72	45	54	36	18	39	34	N.	W.	185	.02	30
30.20	50	46	54	38	16	36	26	NE.	SE.	159	.01	31
30.05	61.6	41.8	50.0	33.7	16.3	35.2	27.4	{ S. NW.	{ N. S. }	6,890	2.50	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

APRIL, 1895.

[illegible]

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1203

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

APRIL, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
29.72	88	51	60	42	18	46	44	E.	E.	145	0.05	1
29.60	91	50	54	46	8	46	45	NE.	NE.	191	.24	2
29.80	57	41	47	35	12	34	26	W.	NW.	302	.16	3
30.07	47	44	53	34	19	37	26	W.	W.	199	.....	4
30.21	49	54	66	42	24	44	33	S.	SE.	125	.....	5
30.19	56	58	73	44	29	50	42	E.	S.	166	.....	6
30.16	76	55	66	44	22	50	46	NE.	SE.	206	T.	7
29.66	94	59	62	56	6	58	57	SE.	SE.	240	1.68	8
29.45	62	58	64	53	11	49	42	W.	W.	320	.09	9
30.03	44	54	60	48	12	43	31	NW.	W.	335	.01	10
30.61	45	42	50	35	15	35	23	NE.	SE.	179	.....	11
30.49	70	47	61	33	28	43	38	SE.	S.	218	.....	12
29.98	88	53	59	47	12	48	46	S.	NE.	206	.77	13
29.78	72	50	59	41	18	44	39	N.	W.	161	.01	14
29.94	52	46	52	41	11	39	29	NW.	NW.	310	T.	15
30.12	62	48	55	40	15	44	36	NW.	NE.	191	.....	16
30.08	50	48	56	41	15	39	28	NE.	NE.	288	T.	17
30.06	38	48	60	37	23	40	26	N.	SE.	207	.....	18
30.03	44	54	67	41	26	46	34	NW.	NW.	163	.05	19
30.06	28	62	75	49	26	48	30	NW.	NW.	247	.....	20
30.18	66	54	66	42	24	46	40	NE.	S.	189	.....	21
29.99	76	58	67	48	19	52	48	SE.	S.	163	.....	22
30.00	38	58	71	44	27	48	34	SW.	NW.	228	.....	23
30.08	54	58	75	42	33	51	43	E.	S.	148	.....	24
30.07	46	72	86	58	28	57	47	S.	S.	102	.....	25
30.12	61	74	85	62	23	61	56	S.	SE.	158	.....	26
30.08	89	62	67	56	11	58	56	S.	NE.	168	.84	27
30.20	90	50	52	47	5	48	46	NE.	NE.	283	1.17	28
30.22	96	49	52	46	6	49	48	NE.	NE.	256	.68	29
30.13	97	56	61	50	11	55	54	N.	N.	164	.51	30
30.04	64.4	53.8	62.7	44.8	17.9	46.9	39.8	NE.	NE.	6,258	6.26	

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

MAY, 1895.

[illegible]

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1205

ages; also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

MAY, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew-point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.23	70	56	59	52	7	52	46	NE.	NE.	347	0.15	1
30.25	83	55	63	47	16	50	48	N.	N.	189	.01	2
30.16	90	62	71	54	17	58	58	NE.	SE.	112	.01	3
30.18	84	68	76	59	17	63	61	N.	SE.	78	.....	4
30.23	84	68	81	56	25	63	61	0	SE.	104	.....	5
30.28	88	68	74	62	12	64	62	NE.	SE.	149	.02	6
30.22	92	72	80	63	17	65	64	SE.	S.	153	.03	7
30.08	80	73	82	64	18	66	64	S.	S.	183	.....	8
29.99	77	74	87	62	25	66	64	W.	W.	73	.....	9
29.94	71	78	91	64	27	70	66	0	SE.	89	.....	10
29.73	82	77	86	68	18	67	65	S.	SW.	196	.05	11
29.88	56	54	60	47	13	44	36	N.	NW.	380	.42	12
30.08	44	50	60	40	20	41	30	NW.	E.	190	.....	13
29.96	57	52	56	47	9	42	34	W.	W.	292	.28	14
30.06	52	49	56	42	14	43	34	NW.	W.	227	T.	15
30.05	88	50	55	45	10	46	44	N.	SW.	94	.28	16
30.15	54	52	63	40	23	45	36	NE.	SE.	127	T.	17
30.10	77	54	61	47	14	49	46	E.	SE.	116	.11	18
30.09	76	58	68	48	20	53	49	S.	E.	172	.04	19
30.14	84	56	65	47	18	54	53	NE.	E.	97	.05	20
30.21	93	48	52	44	8	47	46	N.	N.	160	.95	21
30.24	62	52	62	41	21	41	39	NE.	0	127	.01	22
30.26	54	60	74	47	27	53	45	SW.	S.	113	.....	23
30.25	65	62	75	49	26	56	50	S.	S.	126	.....	24
30.07	86	66	73	60	13	62	60	SE.	E.	139	.17	25
29.79	92	66	73	60	13	64	62	E.	S.	102	.22	26
29.84	76	62	70	54	16	56	52	N.	NW.	234	.29	27
30.12	62	60	77	44	33	58	50	SW.	S.	133	.....	28
30.18	60	73	90	56	34	64	58	SW.	SW.	90	.....	29
30.05	55	81	95	67	28	71	65	W.	W.	174	.....	30
30.03	58	84	94	74	20	72	67	NW.	W.	200	.....	31
30.09	72.6	62.6	71.9	53.2	18.7	56.3	52.0	NE.	SE.	4,966	3.09	

1206 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE X.—Daily mortality, classified by color; different diseases, violence, and

JUNE, 1895.

Day of month.	Color.	Mortality.																									
		Total deaths, less those by violence.	Deaths by violence.			Deaths, by ages.				Scarlet fever	Group.	Diphtheria.	Diarrheal diseases.	Typhoid fever.	Typhomalarial fever.	Malarial fevers.	Pulchis pulmonalis.	Pneumonia.									
			Accidents and negligence.	Homicides.	Suicides.	60 years old and over, less those by violence.	Under 5 years old, less those by violence.	Under 8 days old, less those by violence.	1 day old and under, less those by violence.																		
1.....	W. C.	14	1	...	...	5	5	...	...	...	...	...	...	1	...	1	1	...	
2.....	C. W.	10	...	...	...	1	4	...	...	...	...	1	1	1	...	1	1	...		
3.....	W. C.	14	...	...	...	5	5	...	...	...	...	...	...	...	...	...	...	...
4.....	C. W.	8	...	...	...	5	4	...	...	...	...	...	...	...	...	...	...	...
5.....	W. C.	10	1	...	...	2	6	...	...	...	1	...	3	...	...	2	1	...		
6.....	C. W.	2	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...
7.....	W. C.	7	...	...	...	3	2	...	...	...	...	...	...	1	...	1	2	...
8.....	C. W.	9	...	...	...	1	4	...	...	...	...	...	...	...	...	1	1	...
9.....	W. C.	3	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
10.....	C. W.	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
11.....	W. C.	5	1	...	...	1	3	2	2	...	...	...	...	...	...	1	1	...	
12.....	C. W.	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13.....	W. C.	3	...	...	...	...	2	...	...	...	...	...	1	...	...	1	2	...
14.....	C. W.	10	1	...	...	5	2	1	...	...	...	1	...	...	...	2	1	...	
15.....	W. C.	6	...	...	...	1	1	...	...	...	...	...	1	...	...	1	1	...
16.....	C. W.	4	...	...	1	1	1	...	...	...	...	1	...	...	...	2	1	...
17.....	W. C.	4	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...
18.....	C. W.	7	...	...	...	2	1	...	...	...	...	...	...	...	...	1	1	...
19.....	W. C.	8	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
20.....	C. W.	6	...	...	...	3	2	...	...	...	...	1	...	...	...	1	3	...
21.....	W. C.	7	1	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
22.....	C. W.	10	...	...	...	2	3	1	1	...	...	...	...	1	...	1	1	...		
23.....	W. C.	7	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
24.....	C. W.	5	1	...	...	2	1	...	...	...	...	...	...	...	...	1	1	...
25.....	W. C.	4	...	...	...	...	3	...	...	...	...	...	...	...	...	1	1	...
26.....	C. W.	14	...	...	...	3	3	1	1	...	...	...	...	...	...	1	1	...
27.....	W. C.	4	2	...	1	...	8	1	1	...	...	...	6	...	...	1	1	...				
28.....	C. W.	15	1	...	...	2	2	...	...	...	...	...	...	...	...	1	1	...
29.....	W. C.	6	...	...	...	7	4	1	...	...	...	...	...	...	...	1	1	...
30.....	C. W.	1	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
Total and mean.	W. C.	214	10	0	3	65	65	6	5	0	1	1	28	3	1	2	26	6									
	C.	189	9	0	0	30	80	11	5	0	0	1	21	5	0	1	24	3									

ages: also daily meteorological conditions and variations, etc.—Continued.

[Barometer reduced to sea level. T indicates trace of precipitation.]

JUNE, 1895.

Meteorological.												
Mean barometer.	Mean relative humidity.	Temperature (exposed bulb).				Mean wet bulb.	Mean dew point.	Direction of wind.		Total movement of wind.	Rainfall.	Day of month.
		Mean.	Maximum.	Minimum.	Range.			8 a. m.	8 p. m.			
30.05	57	86	97	74	23	74	68	W.	W.	162	.....	1
30.00	56	88	97	78	19	73	68	NW.	SW.	165	.....	2
29.95	56	86	98	75	23	72	67	NW.	S.	132	.....	3
30.05	78	78	86	71	15	71	69	NE.	E.	172	.....	4
30.02	91	76	88	64	24	66	64	NE.	NW.	148	0.60	5
30.10	58	72	79	64	15	60	54	NW.	NW.	191	.17	6
30.32	64	64	73	54	19	56	50	NW.	0	187	.....	7
30.29	70	66	78	53	25	61	58	NE.	SE.	99	.....	8
30.19	65	68	78	57	21	59	54	N.	NE.	183	T.	9
30.14	81	70	78	63	15	65	62	N.	NE.	212	T.	10
30.18	89	70	77	64	13	66	66	NE.	NE.	195	.07	11
30.04	92	71	75	67	8	67	66	NE.	S.	134	.26	12
29.84	88	70	78	63	15	66	65	SW.	S.	102	.79	13
29.90	70	75	87	63	24	67	64	NW.	S.	107	T.	14
30.10	69	76	83	70	13	66	62	N.	N.	106	.04	15
30.36	64	70	79	61	18	62	58	NE.	E.	189	.....	16
30.37	66	66	76	56	20	60	54	NE.	SE.	124	.....	17
30.14	57	70	84	57	27	63	56	N.	E.	102	.....	18
30.00	60	74	89	59	30	66	61	SW.	SE.	78	.....	19
30.00	72	77	91	63	28	71	68	SE.	S.	68	.....	20
30.00	78	76	85	67	18	69	66	SE.	NE.	110	.02	21
30.00	79	74	83	66	17	70	67	N.	E.	105	.02	22
29.97	76	78	91	64	27	70	67	S.	W.	79	.01	23
29.96	58	76	88	65	23	66	59	E.	S.	107	.....	24
29.97	74	78	89	66	23	71	68	SW.	E.	75	.....	25
29.94	70	79	89	69	20	73	70	SE.	SE.	161	.....	26
30.00	93	76	86	66	20	68	68	NE.	NW.	111	.51	27
30.09	71	74	85	64	21	68	64	N.	SW.	94	.....	28
30.18	80	78	87	69	18	70	68	S.	NW.	100	.90	29
30.14	90	77	85	69	16	72	71	S.	S.	115	.95	30
30.07	72.3	74.6	84.6	64.7	19.9	66.9	63.9	NE.	S.	3,913	4.34	

1208 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XI.—*Showing deaths, arranged according to age, sex, and color, with percentages for nineteen years, ended June 30, 1895.*

WHITE MALES.

Nineteen years, ended June 30, 1895.	Total deaths.	5 years and over.		20 years and over.		40 years and over.	
		Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.
1877.....	1, 148	725	63. 15	633	55. 14	432	37. 63
1878.....	1, 125	683	60. 71	568	50. 49	380	33. 78
1879.....	1, 130	689	60. 97	562	49. 73	384	33. 98
1880.....	1, 097	711	64. 18	641	58. 43	459	41. 84
1881.....	1, 179	791	67. 10	709	60. 14	509	43. 17
1882.....	1, 254	854	68. 10	751	59. 88	541	43. 14
1883.....	1, 196	820	68. 53	709	59. 28	533	44. 57
1884.....	1, 322	885	66. 94	764	57. 79	572	43. 12
1885.....	1, 375	957	69. 67	841	61. 16	601	43. 71
1886.....	1, 312	949	72. 33	841	64. 10	610	46. 49
1887.....	1, 343	940	69. 84	845	62. 91	596	44. 38
1888.....	1, 456	978	67. 14	875	60. 06	651	44. 78
1889.....	1, 458	969	66. 46	873	60. 00	648	44. 44
1890.....	1, 631	1, 155	70. 81	1, 038	63. 64	742	45. 49
1891.....	1, 697	1, 201	70. 77	1, 092	64. 35	830	48. 01
1892.....	1, 847	1, 302	70. 50	1, 175	63. 56	866	46. 89
1893.....	2, 020	1, 442	71. 38	1, 329	65. 79	997	49. 35
1894.....	1, 815	1, 260	69. 42	1, 132	62. 37	854	47. 05
1895.....	1, 715	1, 271	74. 11	1, 161	67. 69	861	50. 20
Total deaths and mean percentages thereto.	27, 120	18, 582	68. 51	16, 539	60. 98	12, 066	44. 49

WHITE FEMALES.

Nineteen years, ended June 30, 1895.	Total deaths.	5 years and over.		20 years and over.		40 years and over.	
		Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.
1877.....	1, 039	621	59. 77	522	50. 24	339	32. 63
1878.....	1, 041	653	62. 73	541	51. 97	354	32. 61
1879.....	1, 066	647	60. 69	535	50. 19	334	31. 33
1880.....	988	592	59. 92	529	53. 54	351	35. 53
1881.....	1, 026	716	69. 78	611	59. 55	404	39. 38
1882.....	1, 099	731	66. 52	631	57. 42	410	37. 31
1883.....	1, 075	728	67. 78	632	58. 85	439	40. 88
1884.....	1, 254	801	63. 88	687	54. 78	465	37. 08
1885.....	1, 235	832	67. 37	705	57. 08	489	39. 50
1886.....	1, 130	803	71. 06	702	62. 12	458	40. 53
1887.....	1, 141	800	70. 20	697	61. 08	488	42. 77
1888.....	1, 322	898	67. 92	791	59. 83	530	40. 09
1889.....	1, 255	845	67. 33	733	58. 40	511	40. 71
1890.....	1, 303	883	67. 76	781	59. 94	525	40. 29
1891.....	1, 409	1, 011	71. 75	897	63. 66	607	43. 08
1892.....	1, 595	1, 134	71. 10	990	62. 07	686	43. 01
1893.....	1, 657	1, 148	69. 28	1, 016	61. 31	734	44. 29
1894.....	1, 514	1, 070	70. 67	943	62. 28	703	46. 43
1895.....	1, 399	1, 024	73. 20	899	64. 26	648	46. 31
Total deaths and mean percentages thereto.	23, 547	15, 937	67. 68	13, 842	58. 78	9, 475	40. 24
Total whites.....	50, 667	34, 519	68. 04	30, 381	59. 88	21, 541	42. 36

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TABLE XI.—Showing deaths, arranged according to age, sex, color, etc.—Continued.

COLORED MALES.

Nineteen years, ended June 30, 1895.	Total deaths.	5 years and over.		20 years and over.		40 years and over.	
		Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.	Number of deaths.	Percentage to total deaths.
1877.....	988	417	42.20	337	34.11	206	20.85
1878.....	1,007	394	39.13	311	30.88	197	19.56
1879.....	1,051	430	40.91	348	33.11	209	19.89
1880.....	1,025	407	39.71	325	31.71	186	18.15
1881.....	921	424	46.04	347	37.68	210	22.80
1882.....	1,062	500	47.08	402	37.85	245	23.07
1883.....	1,004	504	50.20	397	39.54	253	25.20
1884.....	1,081	481	44.50	381	35.24	242	22.39
1885.....	1,210	587	48.51	476	39.34	300	24.70
1886.....	1,077	574	53.29	458	42.52	297	27.57
1887.....	1,079	536	49.67	427	39.60	270	25.02
1888.....	1,049	536	51.09	440	41.94	301	28.69
1889.....	1,180	583	49.41	475	40.25	289	24.50
1890.....	1,292	682	52.79	532	41.17	352	27.24
1891.....	1,295	696	53.75	557	43.01	352	27.18
1892.....	1,369	740	54.00	600	43.82	282	20.60
1893.....	1,391	744	53.49	606	43.56	383	27.54
1894.....	1,352	714	52.81	587	43.42	357	26.40
1895.....	1,188	690	58.08	528	44.44	359	30.22
Total deaths and mean percentages thereto.	21,621	10,639	49.20	8,534	39.47	5,390	24.93

COLORED FEMALES.

1877.....	1,033	518	50.45	396	38.33	221	21.30
1878.....	1,058	504	47.64	374	35.35	208	19.66
1879.....	1,062	523	49.25	424	39.92	230	21.62
1880.....	1,096	537	49.00	434	39.60	237	21.62
1881.....	1,010	525	51.91	448	44.36	231	22.87
1882.....	1,156	613	53.03	490	42.39	282	24.30
1883.....	1,012	540	53.36	422	41.70	243	24.01
1884.....	1,157	607	52.46	466	40.28	261	22.56
1885.....	1,178	664	56.37	510	43.29	319	27.80
1886.....	1,155	652	56.45	516	44.67	297	25.71
1887.....	1,102	598	54.26	459	41.65	284	25.77
1888.....	1,213	686	56.60	547	45.10	303	25.00
1889.....	1,259	666	52.90	509	40.43	293	23.27
1890.....	1,338	776	57.10	594	44.39	341	25.48
1891.....	1,319	746	56.55	609	46.17	368	27.89
1892.....	1,287	737	57.29	590	45.84	357	27.74
1893.....	1,384	750	54.84	598	43.21	371	26.80
1894.....	1,358	773	56.92	592	43.59	357	26.28
1895.....	1,263	815	64.53	619	51.38	412	32.63
Total deaths and mean percentages thereto.	22,440	12,339	54.98	9,627	42.90	5,615	25.02
Total colored	44,061	22,978	52.09	18,161	41.18	11,005	24.97
Grand total and mean.	94,728	57,497	60.06	48,542	50.53	32,546	33.66

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TABLE XII.—Deaths and average ages in fifteen years, from July 1, 1881, to June 30, 1895, inclusive.

WHITE.

Year.	All ages.		5 years and over.		20 years and over.		40 years and over.	
	Total deaths.	Average.	Total deaths.	Average.	Total deaths.	Average.	Total deaths.	Average.
		y. m. d.		y. m. d.		y. m. d.		y. m. d.
1881.....	2,205	32 0 1	1,507	46 3 0	1,320	51 3 8	913	60 6 26
1882.....	2,353	32 1 6	1,585	46 7 5	1,382	51 7 23	951	62 3 13
1883.....	2,270	32 4 22	1,548	45 9 2	1,341	51 10 20	972	60 10 29
1884.....	2,576	31 1 28	1,686	46 8 13	1,541	52 5 15	1,037	61 1 28
1885.....	2,610	32 3 4	1,789	46 2 17	1,546	51 3 17	1,090	61 3 18
1886.....	2,442	34 6 19	1,752	46 10 22	1,543	51 8 20	1,068	61 10 1
1887.....	2,484	34 1 17	1,740	47 7 15	4,542	52 3 6	1,084	61 11 19
1888.....	2,778	33 2 28	1,876	48 0 28	1,666	52 10 12	1,181	62 5 14
1889.....	2,713	32 8 6	1,814	47 11 2	1,606	52 6 5	1,159	61 5 11
1890.....	2,934	33 8 0	2,038	47 3 9	1,819	51 11 29	1,267	61 10 5
1891.....	3,106	34 7 25	2,212	48 4 11	1,989	52 8 5	1,437	62 2 21
1892.....	3,442	34 6 7	2,436	48 2 16	2,165	52 10 1	1,552	62 4 23
1893.....	3,677	34 1 19	2,590	49 2 9	2,345	52 10 2	1,731	61 9 18
1894.....	3,329	35 9 26	2,330	50 0 7	2,075	51 10 17	1,557	62 6 24
1895.....	3,114	36 9 22	2,295	49 10 16	2,060	53 9 1	1,509	62 7 26
Total and mean ...	42,033	33 7 10	29,198	47 8 23	25,850	52 3 4	18,508	61 9 28

COLORED.

		y. m. d.		y. m. d.		y. m. d.		y. m. d.
1881.....	1,931	20 11 6	949	41 9 13	795	47 8 10	441	63 1 4
1882.....	2,218	21 5 23	1,113	41 0 3	892	48 5 16	527	61 11 16
1883.....	2,016	21 9 17	1,044	40 8 23	821	48 10 7	496	61 2 27
1884.....	2,238	19 11 13	1,088	40 5 23	847	49 1 3	507	61 2 3
1885.....	2,388	22 7 29	1,249	40 6 18	986	50 0 22	618	62 11 2
1886.....	2,232	22 11 17	1,226	41 4 4	974	47 6 20	594	62 0 14
1887.....	2,181	22 0 7	1,134	41 3 22	886	49 4 16	554	59 6 23
1888.....	2,262	22 11 3	1,222	41 9 22	987	48 8 2	604	60 8 13
1889.....	2,439	21 11 24	1,240	40 11 8	984	47 6 13	582	60 3 22
1890.....	2,630	22 10 6	1,458	40 11 20	1,126	47 3 2	693	59 5 10
1891.....	2,614	22 9 29	1,442	40 6 17	1,166	47 6 1	720	58 11 27
1892.....	2,656	23 4 23	1,477	40 9 2	1,190	48 0 28	739	58 11 6
1893.....	2,775	23 8 18	1,503	41 3 5	1,204	48 4 28	754	60 3 2
1894.....	2,710	22 11 9	1,487	39 9 16	1,179	46 10 16	714	59 5 1
1895.....	2,451	25 8 27	1,505	41 5 3	1,177	47 10 15	771	59 7 12
Total and mean ...	35,741	22 5 8	19,137	40 11 13	15,214	48 2 19	9,314	60 7 22
Aggregate	77,774	28 0 9	48,335	44 4 3	41,064	50 2 25	27,822	61 2 27

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TABLE XIII.—Deaths under 1 month of age from convulsions and trismus nascentium, by age and months, for year ended June 30, 1895.

BY AGE.

	Convulsions.					Trismus nascentium.				
	White.		Colored.		Total.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.		Male.	Female.	Male.	Female.	
Under 1 day.....		1	2	1	4					1
1 day to 2 days.....	2		3		5	1				1
2 days to 3 days.....			3	1	4					
3 days to 4 days.....		1			1			1		1
4 days to 5 days.....			1		1			1		1
5 days to 6 days.....	1		2	3	6		1		1	2
6 days to 7 days.....	2	2	3	4	11	1	1	1	2	5
7 days to 8 days.....	1		5	4	10		2	1	2	5
8 days to 9 days.....				2	2			1		3
9 days to 10 days.....		1	1	1	3			1		1
10 days to 11 days.....			1		1					
11 days to 12 days.....			2		2					
12 days to 13 days.....			1	1	2			2		2
13 days to 14 days.....		1	2	1	4			1		1
2 weeks to 3 weeks.....	1	1	2	1	5			1		1
3 weeks to 4 weeks.....	1	1	2	1	5	1				1
Total.....	8	8	30	20	66	3	4	9	8	24

BY MONTHS.

July.....	3	2	6	2	13			1		1
August.....	1		1	1	3	1	1			2
September.....			4	1	5			1	1	2
October.....		1	4	4	9		1	1	1	3
November.....		1	3	2	6			2	1	3
December.....	2	2	1	2	7			1	1	2
January.....	2	1	1	1	5			1		1
February.....		1			1					
March.....			2	2	4		1	2	1	4
April.....		1	2	2	5					
May.....			2	1	3	2		1	2	5
June.....			3	2	5		1			1
Total.....	8	8	30	20	66	3	4	9	8	24

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TABLE XIV.—STILLBIRTHS.—*Cause, legitimacy, period of utero-gestation, and by whom reported, for the year ended June 30, 1895.*

	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
Legitimacy:					
Legitimate	101	72	94	78	345
Illegitimate	16	12	95	72	195
Total	117	84	189	150	540
Period of utero-gestation:					
Four months and under	10	7	23	16	56
Fifth month	8	9	19	8	44
Sixth month	14	6	23	13	56
Seventh month	13	15	25	29	82
Eighth month	22	21	34	24	101
Ninth month	48	24	62	60	194
Tenth month	2	2	3	0	7
Total	117	84	189	150	540
By whom reported:					
Physicians	105	73	145	109	432
Coroner	12	11	44	41	108
Total	117	84	189	150	540
Causes:					
Abortive habit			1	1	2
Anacephalus					2
Ante-partum hemorrhage	1	1			2
Asphyxia			1	1	2
Cord:	2	2	2	2	8
Pressure on					
Prolapsus	3	1	1		5
Strangulated		1	2	1	4
Criminal abortion	4		1	2	7
Developmenta—abnormal				1	1
Difficult and prolonged labor	1	1	1		3
Fall of mother	8	4	7	2	21
Fright of mother	8	2	10	11	31
Hydramnion	1	1	4		6
Hydrocephalus	1	3			4
Ill health of mother		1			1
Injury to mother	8	1	3		12
Instrumental delivery		4	4	2	10
Malformation of pelvis	2	2		1	5
Maceration in utero	2	3	1		6
Miscarriage	1	2	7	3	13
Nonviable (prematurity of fetus)	1				1
Neglect	4	6	21	15	46
Overexertion of mother				1	1
Placental hemorrhage	5	3	10	11	29
Placenta previa	1	2			3
Presentation:	2	2	1	2	7
Breech					
Foot	1	2	2	1	6
Transverse	1				1
Premature delivery			5		5
Puerperal eclampsia (mother)	6	4	3	1	14
Syphilis	2				2
Uremia (mother)	1		3	2	6
Umbilical hemorrhage	1		1		2
Vomiting in pregnancy		1			1
Unknown and not stated		1			1
Total	50	33	98	90	271
Total	117	84	189	150	540

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TABLE XV.—BIRTHS REPORTED.—*Statement, by months and quarters, for the year ended June 30, 1895.*

Months and quarters.	Total.	White.		Colored.		Twins.		Triplet.		Illegiti- mates.		Attended by physi- cians.		Attended by mid- wives.	
		Male.	Female.	Male.	Female.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.
1894.															
July	392	118	119	57	98	2	.....	.....	.....	10	46	147	64	90	91
August	399	113	124	83	79	2	4	.....	.....	7	46	132	68	105	94
September	435	139	126	80	90	4	12	.....	.....	6	43	178	66	87	104
Total first quarter...	1,226	370	369	220	267	8	16	.....	.....	23	135	457	198	282	289
October	423	142	122	76	83	6	2	.....	.....	10	42	158	56	106	103
November	401	126	110	89	76	4	.....	.....	3	10	36	123	46	113	119
December	411	118	136	89	68	4	4	.....	.....	6	32	146	46	108	111
Total second quarter	1,235	386	368	254	227	14	6	.....	3	26	110	427	148	327	333
1895.															
January	454	131	149	86	88	.....	6	.....	.....	14	49	167	63	113	111
February	417	131	123	79	84	6	2	.....	.....	5	47	164	66	90	97
March	391	107	122	75	87	2	4	.....	.....	8	47	155	80	74	82
Total third quarter...	1,262	369	394	240	259	8	12	.....	.....	27	143	486	209	277	290
April	358	109	101	82	66	8	8	.....	.....	5	40	113	53	97	95
May	365	117	106	68	74	4	8	.....	.....	15	40	135	63	88	79
June	348	107	82	74	85	6	4	.....	.....	8	52	110	67	79	92
Total fourth quarter...	1,071	333	289	224	225	18	20	.....	.....	28	132	358	183	264	266
Total by sex and color	4,794	1,458	1,420	938	978	48	54	3	104	520	1,728	738	1,150	1,178
Total by color.....		2,878		1,916		
Total for the year...	4,794			112		3		624		2,466		2,328	

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TABLE XVI.—BIRTHS.—*Number of births (reported) in different hospitals during the year ended June 30, 1895.*

Month.	Color.	Sex.	Columbia Hospital.	Freedmen's Hos- pital.	Washington Asy- lum Hospital.	Homeopathic Hos- pital.	St. Ann's Infant Orphan Asylum.	Emergency Hos- pital.	Garfield Memorial Hospital.	Soldiers' Home.	Providence Hos- pital.
1894.											
July	White	Male	7	1		1					
		Female	4								
	Colored	Male	7	5							
		Female	12	8	2	1					
August	White	Male	5	1							
		Female	6			2	1				
	Colored	Male	9	9	2			1			
		Female	7	10	1	2					
September	White	Male	6			1	1		1		
		Female				3			1		
	Colored	Male	6	7	1				1		
		Female	10	6	1	2					
October	White	Male	3		1				3		
		Female	7			1				1	
	Colored	Male	4	4	1						
		Female	8	12							
November	White	Male	2	1			1				
		Female	3	1		2			1		
	Colored	Male	5	5							
		Female	6	11	1				2		
December	White	Male	5			1					
		Female	5						2		
	Colored	Male	12		1						
		Female	3	2		2					
1895.											
January	White	Male	2		1						1
		Female	6	1			1		1		
	Colored	Male	11	10		2					
		Female	5	4							
February	White	Male	4			2					
		Female	5			1	1				
	Colored	Male	10	12							
		Female	6	7	3						
March	White	Male	3		1						
		Female	3						2		
	Colored	Male	7	6							
		Female	9	9	1						
April	White	Male	3								
		Female									
	Colored	Male	8	5		1					
		Female	8	7							
May	White	Male	2	3	1	1			3		
		Female	8	1		1			1		
	Colored	Male	6	6		2			1		
		Female	7	5	1	2			1		
June	White	Male	5						1		
		Female	3						2		
	Colored	Male	10	13	1	1			2		
		Female	9	6	1	1			2		

RECAPITULATION.

	Total.	White.	Colored.	Males.	Females.
Columbia Hospital	282	97	185	142	140
Freedmen's Hospital	178	9	169	85	93
Washington Asylum Hospital	21	4	17	10	11
Homeopathic Hospital	33	17	16	12	21
St. Ann's Infant Orphan Asylum	3	3		2	1
Emergency Hospital	1	1		1	
Garfield Memorial Hospital	1	1		1	15
Soldiers' Home	26	18	8	11	1
Providence Hospital	1	1		1	
Total	546	151	395	264	282

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TABLE XVII.—MARRIAGES (REPORTED).—*Number of brides and grooms, year ended June 30, 1895.*

Number of marriages of grooms.	Number of marriages of brides.			
	First marriage.	Second marriage.	Third marriage.	Total.
Whites:				
First marriage.....	1,145	68	5	1,218
Second marriage.....	132	41	3	176
Third marriage.....	12	4	1	17
Fourth marriage.....				
Total.....	1,289	113	9	1,411
Colored:				
First.....	786	53	2	841
Second.....	80	45	6	131
Third.....	3	4		7
Fourth.....	1			1
Total.....	870	102	8	980
Grand total.....	2,159	215	17	2,391

TABLE XVIII.—MARRIAGES (REPORTED).—*Nationality of brides and grooms of white race, year ended June 30, 1895.*

Birthplaces of grooms.	Birthplaces of brides.									
	United States.	Germany.	England.	Scotland.	Ireland.	Canadian Dominion.	Russia.	Sweden and Norway.	Italy.	Australia.
United States.....	1,219	12	4	2	10	1				1
Germany.....	38	31			1		2			1
England.....	19	1			2			1		
Scotland.....	3				1					
Ireland.....	14		1		12					
Canadian Dominion.....	5		1							
Russia.....		1					10			
Sweden and Norway.....										
Italy.....	3								3	
Australia.....										
Other countries.....	7	2								3
Total.....	1,308	47	6	2	26	1	12	1	3	4

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TABLE XIX.—MARRIAGES (REPORTED).—*Ages of brides and grooms of white race for year ended June 30, 1895.*

Ages of grooms.	Ages of brides.								Total.
	Un- der 20 years.	20 to 25 years.	25 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	
Under 20 years.....	7	2	.....	.....	.....	.....	.....	.....	9
20 to 25 years.....	200	257	23	2	1	.....	.....	.....	483
25 to 30 years.....	81	237	103	16	2	.....	.....	.....	439
30 to 40 years.....	42	94	97	72	7	.....	.....	.....	312
40 to 50 years.....	11	20	18	38	17	2	.....	.....	106
50 to 60 years.....	.....	3	7	6	18	2	.....	.....	36
60 to 70 years.....	.....	2	3	1	7	8	1	.....	22
70 to 80 years.....	.....	.....	.....	3	.....	1	.....	.....	4
80 to 90 years.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	341	615	251	138	52	13	1	.....	1,411

TABLE XX.—MARRIAGES (REPORTED).—*Ages of brides and grooms of colored race for year ended June 30, 1895.*

Ages of grooms.	Ages of brides.								Total.
	Un- der 20 years.	20 to 25 years.	25 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	
Under 20 years.	5	.....	.....	.....	.....	.....	.....	.....	5
20 to 25 years.	91	211	24	4	.....	.....	.....	.....	330
25 to 30 years.	17	126	75	13	.....	.....	.....	.....	231
30 to 40 years.	11	84	74	75	6	.....	.....	.....	250
40 to 50 years.	3	15	16	51	31	2	.....	.....	118
50 to 60 years. ....	.....	1	4	12	17	.....	1	.....	35
60 to 70 years. ....	.....	.....	.....	1	6	2	1	.....	10
70 to 80 years. ....	.....	.....	.....	.....	.....	.....	.....	.....	1
80 to 90 years. ....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	127	437	193	157	60	4	2	.....	980

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1217

TABLE XXI.—Deaths and death rates for the last twenty fiscal years.

Year.	July.					August.					September.				
	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.
	Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.	
1875.....	223	25.46	203	54.63	32.77	227	25.81	218	52.12	34.01	162	18.68	194	47.61	27.93
1876.....	298	32.78	269	57.62	42.24	209	27.88	188	43.39	29.44	172	19.34	177	41.74	26.57
1877.....	224	24.07	252	46.15	34.59	206	22.25	208	46.42	30.11	164	17.97	154	34.95	23.38
1878.....	222	23.12	251	50.00	33.14	201	20.94	224	47.93	29.77	156	16.66	147	32.10	21.73
1879.....	250	25.49	242	45.47	33.40	182	18.47	179	36.33	24.56	154	16.04	171	35.92	22.62
1880.....	192	19.15	179	49.08	24.53	154	15.23	171	33.55	21.37	197	19.99	168	33.94	24.66
1881.....	236	22.77	245	29.44	30.77	208	20.07	226	42.90	27.76	201	19.84	202	39.12	26.35
1882.....	230	21.70	214	36.01	27.63	165	15.54	176	32.65	21.17	141	13.57	163	30.36	18.23
1883.....	300	28.15	210	30.88	31.39	198	18.41	201	36.02	24.57	168	15.76	168	30.10	20.68
1884.....	223	20.44	202	36.19	25.50	245	22.40	199	34.46	26.64	236	21.67	190	32.90	25.56
1885.....	323	28.50	272	47.30	34.82	210	18.53	183	32.69	22.13	194	17.12	169	29.39	21.25
1886.....	218	18.64	222	38.06	25.14	220	18.86	308	34.80	24.17	247	21.17	192	32.91	25.09
1887.....	310	28.13	235	37.60	29.07	224	17.92	188	30.08	21.98	233	18.64	200	32.00	23.10
1888.....	272	19.20	243	36.45	24.75	264	18.63	279	41.85	26.06	214	15.10	210	31.50	20.35
1889.....	277	19.25	265	38.25	25.33	274	19.34	232	34.80	24.28	210	14.82	202	30.30	19.77
1890.....	252	17.79	217	35.55	23.47	220	15.53	203	30.42	20.30	248	17.51	195	29.25	21.26
1891.....	290	19.88	260	36.70	25.38	281	19.27	227	32.05	23.45	249	17.06	228	32.19	22.02
1892.....	472	29.09	363	48.40	35.16	307	18.90	222	29.60	22.32	296	18.22	230	30.66	22.14
1893.....	289	18.00	320	42.66	25.64	279	17.17	231	31.07	21.66	252	15.51	218	29.07	19.80
1894.....	302	19.75	283	37.90	25.95	235	15.36	190	26.21	27.60	273	17.80	180	24.82	20.09
Total.....	5,403	.....	5,051	.....	.....	4,509	.....	4,155	.....	.....	4,167	.....	3,658	.....	.....
Mean.....	270.1	23.17	252.5	41.71	29.53	225.9	19.32	207.7	36.47	25.16	208.3	17.62	182.9	32.99	22.62

Year.	October.					November.					December.				
	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.
	Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.	
1875.....	147	16.95	170	41.72	24.87	143	16.49	142	34.85	22.36	147	16.95	146	35.83	22.99
1876.....	164	18.44	167	39.40	25.20	135	15.19	119	28.08	19.34	165	18.55	133	31.32	22.69
1877.....	181	19.83	152	34.59	24.61	155	16.99	129	29.28	20.99	157	17.20	145	32.91	22.32
1878.....	185	19.76	146	31.88	23.74	155	16.56	141	30.79	21.23	169	18.05	152	33.19	23.02
1879.....	129	13.43	127	28.68	17.82	147	15.31	130	27.31	19.28	162	16.87	151	31.72	24.79
1880.....	188	19.08	176	35.55	24.59	162	16.44	134	27.07	20.00	211	21.41	129	26.65	22.97
1881.....	234	23.10	179	34.67	27.00	211	20.83	169	32.73	23.76	173	17.08	145	28.08	20.79
1882.....	180	17.32	176	32.78	22.50	162	15.59	154	28.69	20.05	183	17.61	137	25.32	20.20
1883.....	151	14.16	133	23.83	17.48	182	17.07	175	31.34	21.98	254	23.82	213	37.84	28.69
1884.....	193	17.72	175	30.30	22.08	204	18.73	148	25.63	21.12	188	17.26	177	30.65	21.90
1885.....	159	14.03	166	28.87	19.02	158	14.68	169	29.39	19.14	195	17.21	161	28.00	20.35
1886.....	221	18.94	188	32.23	23.37	194	16.63	160	28.40	20.57	192	16.43	154	26.34	19.77
1887.....	217	17.36	141	22.56	18.76	175	14.00	168	26.88	18.29	212	17.96	149	23.84	19.25
1888.....	227	16.02	201	30.15	20.54	189	13.34	148	22.20	16.17	208	14.68	142	21.30	17.98
1889.....	240	16.94	164	24.60	19.39	194	13.69	173	25.95	17.61	215	15.17	207	31.05	20.25
1890.....	240	16.94	187	28.05	20.49	216	15.25	164	24.60	18.27	249	17.58	202	30.30	21.64
1891.....	296	20.30	199	28.10	22.84	265	18.17	184	26.00	20.70	301	20.64	216	30.50	23.86
1892.....	283	17.38	224	29.87	21.34	242	15.00	182	24.27	21.36	278	17.10	215	28.66	20.76
1893.....	278	17.11	244	24.53	19.45	230	14.15	178	23.73	17.18	335	20.64	185	24.66	21.90
1894.....	246	16.04	236	32.55	21.38	231	15.06	178	24.55	18.14	260	17.00	196	27.04	20.23
Total.....	4,159	.....	3,491	.....	.....	3,750	.....	3,150	.....	.....	4,245	.....	3,355	.....	.....
Mean.....	207.9	17.50	274.5	30.65	21.75	187.5	15.95	157.5	27.50	19.90	212.2	17.90	167.7	29.20	21.65

1218 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XXI.—Deaths and death rates for the last twenty fiscal years—Continued.

Year.	January.					February.					March.				
	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.
	Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.	
1876	160	17.99	137	32.32	22.61	148	17.48	162	40.17	24.58	192	21.58	173	40.82	27.79
1877	182	19.94	147	33.36	24.31	172	20.47	175	43.14	27.86	199	21.81	168	36.24	27.12
1878	178	19.01	165	36.03	24.60	158	18.34	128	39.35	28.28	198	21.15	148	32.31	24.82
1879	212	22.97	162	34.03	26.04	161	18.21	174	39.70	28.33	180	18.74	197	41.38	26.24
1880	168	17.65	156	31.51	21.89	193	20.43	181	38.45	20.57	155	15.73	198	40.00	23.85
1881	202	19.98	138	26.81	22.29	176	18.91	186	39.25	25.73	187	18.50	185	35.95	24.39
1882	168	16.20	165	30.84	21.18	171	17.91	196	39.59	25.36	218	21.02	170	31.77	24.68
1883	182	17.29	158	28.87	21.25	170	17.54	158	31.59	22.27	236	22.42	196	35.81	27.00
1884	252	23.14	201	34.81	27.18	202	19.51	200	36.42	25.37	233	23.23	214	37.05	28.02
1885	196	18.00	182	31.52	22.68	232	23.13	213	40.06	29.00	253	23.23	214	37.05	28.02
1886	225	19.85	153	26.61	22.13	196	18.79	203	38.35	25.37	246	21.71	192	33.39	25.64
1887	210	16.80	159	25.44	19.68	165	13.20	145	23.20	20.42	213	17.04	170	27.20	20.42
1888	221	15.80	187	28.65	19.58	251	17.72	182	27.30	20.00	292	20.60	236	35.40	25.34
1889	222	15.67	208	31.20	20.64	206	14.54	177	25.30	18.38	260	18.35	210	31.50	22.56
1890	311	22.00	287	43.00	28.75	210	14.82	184	27.60	18.91	260	18.35	210	31.50	22.56
1891	220	15.08	194	27.39	19.10	235	16.11	179	25.27	23.72	306	20.98	286	40.40	27.32
1892	378	25.92	265	37.40	30.14	267	18.31	237	33.44	20.68	283	19.37	238	31.62	24.84
1893	301	18.71	231	30.80	22.56	245	15.08	216	28.80	19.44	353	21.72	238	31.62	24.84
1894	281	17.30	190	25.33	19.83	237	14.60	205	27.33	18.61	290	18.90	244	32.53	22.48
1895	270	17.60	178	24.55	19.87	275	18.00	200	27.60	21.07	291	19.00	224	30.89	22.84
Total.	4,539		3,663			4,070		3,701			4,845		4,063		
Mean.	226.9	18.70	183.1	30.45	32.80	203.5	17.60	185.0	33.60	22.75	242.2	20.05	203.2	34.75	24.80

Year.	April.					May.					June.				
	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.	White.		Colored.		Annual death rate for total population.
	Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.		Deaths.	Annual death rate.	Deaths.	Annual death rate.	
1876	143	16.08	153	36.12	22.54	141	15.85	138	32.57	21.24	253	28.44	238	56.15	37.39
1877	148	16.22	145	32.91	21.65	156	17.10	132	29.96	21.28	187	20.49	201	45.62	28.67
1878	145	15.49	174	37.99	22.70	190	20.30	184	40.17	26.83	210	22.43	226	49.34	31.27
1879	176	18.33	158	33.19	23.25	148	15.41	148	31.09	20.61	231	24.05	213	44.74	30.91
1880	160	16.24	165	33.33	21.95	165	16.75	183	36.97	23.51	226	22.33	238	48.08	30.94
1881	191	18.90	194	37.69	25.24	175	17.31	121	23.51	19.40	170	16.82	150	29.15	20.98
1882	178	17.16	160	29.90	21.50	155	14.95	171	32.42	29.72	200	19.29	190	35.51	24.81
1883	219	20.81	162	29.60	23.81	203	19.29	153	27.75	22.25	199	18.91	169	20.88	23.00
1884	225	21.42	175	30.30	24.00	177	16.25	172	29.78	20.94	234	21.43	209	36.19	26.58
1885	210	19.28	220	38.10	25.80	181	16.62	207	35.84	23.28	248	22.77	195	33.91	22.71
1886	184	16.32	194	32.74	22.13	158	13.94	170	29.69	19.26	262	20.96	237	37.92	26.61
1887	182	14.56	173	27.68	18.93	159	12.72	172	27.52	17.65	193	17.40	218	32.70	22.32
1888	211	14.90	196	29.40	19.53	185	13.06	162	24.30	16.60	256	18.07	228	34.20	23.23
1889	213	15.03	189	28.35	19.29	182	12.84	164	24.60	16.60	307	21.67	289	43.35	28.60
1890	198	14.00	195	29.35	18.86	238	19.75	217	32.55	21.84	306	20.98	247	34.87	25.52
1891	387	26.54	310	43.76	32.17	227	15.54	230	32.47	21.10	327	22.42	257	36.28	26.03
1892	244	14.44	202	28.52	20.58	361	17.90	173	24.42	20.03	356	21.91	240	22.00	24.96
1893	282	17.33	200	26.66	20.40	259	15.94	214	28.53	19.92	372	22.95	313	41.73	28.90
1894	256	15.75	218	29.07	19.96	229	14.10	222	29.60	19.00	273	14.80	198	31.31	18.87
1895	275	18.00	210	28.99	21.52	229	14.93	178	24.55	18.05					
Total.	4,227		3,793			3,818		3,611			5,006		4,517		
Mean.	211.3	17.35	189.6	32.15	22.20	190.9	15.90	180.5	29.80	21.95	250.3	20.60	225.8	38.45	26.50

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1219

TABLE XXII.—Deaths of children under 1 year of age, by months, sex, and color, during twenty years from July 1, 1875, to June 30, 1895.

Year.	July.					August.					September.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
1876.....	58	57	50	55	220	37	43	32	37	149	25	17	34	36	112
1877.....	35	47	48	51	181	27	39	30	28	124	15	16	16	10	57
1878.....	21	27	29	31	108	37	28	43	41	149	14	13	26	27	80
1879.....	34	31	44	57	166	23	31	46	42	142	14	23	22	19	78
1880.....	57	54	66	43	220	27	27	48	27	129	22	14	26	24	86
1881.....	38	36	36	47	157	22	16	27	36	101	12	15	38	29	94
1882.....	47	46	65	62	220	38	30	35	45	148	32	28	29	31	120
1883.....	63	31	59	49	202	21	13	24	26	84	16	13	29	19	77
1884.....	46	68	56	46	216	28	22	42	38	130	14	27	24	25	90
1885.....	32	30	46	38	146	38	47	44	43	172	35	34	39	27	135
1886.....	49	57	59	56	221	24	25	36	35	120	26	16	21	28	91
1887.....	35	36	50	49	170	41	24	44	39	148	23	27	45	18	113
1888.....	63	54	44	58	219	35	27	31	40	133	27	27	29	36	119
1889.....	52	56	65	54	227	54	29	59	68	210	39	23	35	33	130
1890.....	43	44	47	47	181	41	42	45	45	173	23	21	28	28	100
1891.....	55	45	51	44	193	31	31	42	34	138	36	31	42	32	141
1892.....	54	47	57	58	216	37	30	41	36	144	28	27	34	32	121
1893.....	78	83	82	81	324	35	43	39	52	169	33	28	36	29	136
1894.....	55	53	84	75	267	42	44	43	45	174	42	18	35	35	130
1895.....	48	52	52	55	207	34	16	35	32	117	27	33	33	28	121
Total.....	963	952	1,090	1,056	4,061	672	607	786	789	2,854	503	451	621	556	2,131
Total by color.	1,915		2,146		.....	1,279		1,575		.....	954		1,177		.....
Total males...			2,053		.....			1,458		.....			1,124		.....
Total females.			2,008		.....			1,396		.....			1,007		.....

Year.	October.					November.					December.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
1876.....	5	5	14	13	39	4	7	7	14	32	8	3	20	10	41
1877.....	14	9	30	25	78	12	6	16	19	53	11	10	24	27	72
1878.....	14	15	22	17	68	15	10	18	22	65	9	6	25	24	64
1879.....	11	14	25	18	68	13	5	32	18	68	19	10	24	16	69
1880.....	12	4	25	22	63	16	9	19	21	65	14	11	27	21	73
1881.....	20	8	28	24	80	15	5	19	23	62	16	9	20	27	72
1882.....	22	17	32	14	85	17	16	30	20	83	13	13	20	20	66
1883.....	24	23	24	26	97	11	12	25	19	67	9	14	23	17	63
1884.....	16	18	19	12	58	13	14	20	19	66	20	9	24	33	86
1885.....	15	20	30	21	86	19	14	21	19	73	22	11	25	21	79
1886.....	13	8	19	21	61	14	15	23	20	72	13	10	20	16	59
1887.....	27	23	35	26	111	13	11	25	22	71	23	7	21	14	65
1888.....	25	8	28	24	85	11	11	17	21	60	24	13	21	22	80
1889.....	17	26	27	30	100	23	15	13	23	74	12	23	32	27	93
1890.....	21	17	22	17	77	20	15	22	11	68	13	11	24	27	75
1891.....	23	16	21	26	86	18	18	19	23	78	27	15	22	28	92
1892.....	26	28	33	28	115	17	12	31	12	72	33	18	30	30	111
1893.....	33	18	40	27	117	20	14	26	22	82	25	15	29	27	96
1894.....	30	22	27	10	89	20	17	27	24	88	25	19	23	14	81
1895.....	24	20	29	31	104	17	15	24	16	72	22	14	23	17	76
Total.....	393	312	530	432	1,167	308	241	434	388	1,371	358	240	477	438	1,513
Total by color.	705		962		.....	549		822		.....	598		915		.....
Total males...			923		.....			742		.....			835		.....
Total females.			744		.....			629		.....			678		.....

1220 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

TABLE XXII.—Deaths of children under 1 year of age, by months, sex, and color, during twenty years, from July 1, 1875, to June 30, 1895—Continued.

Year.	January.					February.					March.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
1876.....	6	8	15	13	42	12	6	17	10	55	11	10	25	12	58
1877.....	20	18	24	18	80	19	18	28	32	97	25	17	24	19	95
1878.....	13	12	30	24	79	18	7	20	12	57	23	16	22	15	76
1879.....	22	10	29	24	85	13	12	23	28	76	27	15	33	23	98
1880.....	18	19	16	20	71	21	22	26	22	91	13	13	35	26	87
1881.....	11	18	15	20	64	20	12	19	34	85	14	15	25	26	80
1882.....	7	11	25	21	64	11	7	23	32	73	16	14	36	24	90
1883.....	22	7	23	29	81	15	3	26	23	67	9	19	26	21	75
1884.....	18	16	31	29	94	19	9	18	25	71	17	11	24	25	77
1885.....	19	10	27	18	74	21	11	30	31	93	25	15	30	20	90
1886.....	24	17	16	29	86	25	5	29	17	86	13	19	25	21	78
1887.....	16	15	24	20	75	9	4	21	14	48	24	15	26	24	89
1888.....	17	12	33	28	90	18	11	29	24	82	20	29	42	25	116
1889.....	27	12	34	29	102	13	15	29	22	79	36	30	32	21	99
1890.....	23	16	33	34	106	15	13	24	24	76	25	13	30	19	87
1891.....	13	12	24	24	73	23	17	25	20	85	18	18	29	29	104
1892.....	45	25	54	39	163	24	19	35	31	109	25	20	23	24	92
1893.....	24	20	41	41	126	26	22	32	37	117	35	23	38	35	131
1894.....	25	19	32	16	92	19	16	31	26	92	31	22	33	29	115
1895.....	24	18	22	25	89	20	16	31	20	87	28	28	22	29	107
Total	392	295	548	501	1,736	361	255	516	494	1,626	425	352	600	467	1,844
Total by color.	687		1,049		.....	616		1,010		.....	777		1,067		.....
Total males....	940				.....	877				.....	1,025				.....
Total females...	796				.....	749				.....	819				.....

Year.	April.					May.					June.					Grand totals by months.
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.	
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.		
1876.....	7	5	21	10	43	12	10	12	17	51	58	44	52	45	199	1,041
1877.....	9	18	25	15	67	11	13	24	20	68	42	32	46	41	161	1,133
1878.....	10	13	32	26	81	38	30	45	42	155	49	28	65	41	183	1,165
1879.....	24	15	20	20	79	15	15	21	16	67	52	55	55	48	210	1,206
1880.....	13	15	33	23	84	29	22	32	31	114	47	48	60	67	222	1,305
1881.....	14	14	26	21	75	14	6	24	12	56	39	18	32	26	115	1,041
1882.....	8	14	17	18	57	14	6	33	15	68	39	32	38	54	163	1,237
1883.....	11	14	18	20	73	18	16	20	12	66	30	24	39	34	127	1,079
1884.....	15	10	21	18	64	17	7	24	17	65	45	50	50	43	188	1,205
1885.....	18	15	40	17	90	9	13	23	23	68	45	38	63	49	195	1,301
1886.....	18	15	39	19	91	14	6	25	25	70	35	25	32	33	125	1,160
1887.....	14	13	26	22	75	14	13	25	24	76	64	50	57	68	239	1,280
1888.....	22	15	23	27	87	18	13	29	22	82	40	60	48	54	202	1,355
1889.....	19	13	28	24	84	12	11	17	26	66	60	38	54	52	204	1,468
1890.....	18	14	32	14	78	35	22	49	45	151	62	57	70	68	257	1,429
1891.....	31	15	40	37	123	23	16	25	35	99	71	44	59	47	221	1,433
1892.....	17	18	35	23	83	25	20	28	13	86	71	56	66	59	249	1,571
1893.....	28	17	36	23	104	24	25	37	30	116	59	59	58	50	226	1,744
1894.....	29	13	33	25	100	19	22	33	84	108	83	66	79	82	310	1,646
1895.....	26	17	23	22	88	24	17	25	20	86	30	20	31	22	103	1,257
Total	351	283	578	424	1,636	385	303	551	479	1,718	1,021	844	1,054	980	3,899	26,056
Total by color.	634		1,002		688		1,030		1,865		2,034		{ W. C. }	11,267 14,789
Total males....	929				936				2,075				13,917
Total females...	707				782				1,824				12,139

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TABLE XXIII.—Deaths of children under 5 years of age in the District of Columbia during fifteen calendar years, less those by violence.

Year.	January.			February.			March.			April.			May.			June.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1880.....	47	59	106	49	87	136	51	98	149	50	87	137	45	52	97	71	77	148
1881.....	54	77	131	62	96	158	73	84	157	48	57	99	65	68	133	102	110	212
1882.....	52	75	127	36	74	113	82	89	171	48	84	132	58	55	113	80	89	169
1883.....	74	106	180	68	97	165	59	87	140	62	65	127	46	69	115	123	123	246
1884.....	50	80	136	58	104	162	69	88	157	49	104	153	42	83	125	112	144	256
1885.....	61	70	131	57	75	132	46	85	131	37	89	126	30	66	96	80	88	168
1886.....	46	62	108	23	61	84	58	79	137	52	72	124	38	68	106	135	153	288
1887.....	49	96	145	67	88	455	95	105	200	61	77	138	54	74	128	129	117	246
1888.....	66	103	169	38	81	119	66	90	156	53	77	130	37	58	95	125	123	248
1889.....	62	123	185	39	77	116	54	83	137	45	74	119	75	125	200	154	175	329
1890.....	49	80	129	65	82	147	62	128	190	66	118	184	60	99	159	133	131	264
1891.....	93	117	210	63	98	161	67	75	142	56	76	132	58	63	121	149	150	299
1892.....	63	105	168	71	102	173	76	98	174	65	78	143	70	88	158	143	124	267
1893.....	60	74	134	57	82	139	76	101	177	55	83	138	55	87	142	171	188	359
1894.....	61	66	127	57	79	136	67	85	152	59	66	125	62	60	122	66	80	146
Total.	893	1,293	2,186	813	1,283	2,096	1,001	1,360	2,370	806	1,201	2,007	795	1,115	1,910	1,773	1,872	3,645

Year.	July.			August.			September.			October.			November.			December.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1880.....	86	120	206	69	95	164	56	95	151	67	79	146	52	65	117	53	68	121
1881.....	114	145	259	95	125	220	86	101	187	71	86	157	66	87	145	40	67	107
1882.....	108	133	241	50	91	141	40	85	125	71	68	139	45	72	117	49	57	106
1883.....	149	140	289	75	117	192	70	88	158	39	71	110	46	85	131	79	118	197
1884.....	72	113	185	114	118	232	94	103	197	52	71	123	50	58	108	53	73	126
1885.....	131	158	289	66	100	166	67	72	139	35	66	101	39	76	115	41	61	102
1886.....	185	113	198	83	118	201	77	98	175	65	96	161	41	71	112	42	56	98
1887.....	137	118	255	83	92	175	79	86	165	51	61	112	37	56	93	57	70	127
1888.....	141	145	286	123	171	294	86	106	192	59	91	150	57	56	113	48	91	139
1889.....	105	124	229	119	113	232	71	80	151	73	60	133	50	65	115	49	73	122
1890.....	117	127	244	79	106	185	90	103	193	63	68	131	53	61	114	58	72	130
1891.....	130	141	271	93	112	205	87	105	192	81	87	168	57	89	126	72	86	158
1892.....	202	205	407	96	110	206	87	102	189	80	98	178	56	65	121	61	75	136
1893.....	125	182	207	118	116	234	80	101	181	75	64	139	53	67	120	59	51	110
1894.....	122	133	255	77	93	170	80	83	163	69	84	153	55	55	110	55	61	116
Total.	1,824	1,997	3,821	1,340	1,677	3,017	1,150	1,408	2,558	951	1,150	2,101	747	1,010	1,757	816	1,079	1,895

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TABLE XXIV.—Percentage of deaths of those under 1 year old to total deaths of all ages; also to total births and to total deaths of those under 5 years of age, and total deaths per 1,000 inhabitants of children under 5 years of age, for twenty years, from July 1, 1875, to June 30, 1895, inclusive.

Year.	Total deaths of those under 1 year old.	Total deaths of all ages.	Percentage of deaths of those under 1 year old to total deaths of all ages.	Total births (reported), not including stillbirths.	Percentage of deaths of those under 1 year old to total births, not including stillbirths.	Total deaths of those under 5 years old.	Percentage of deaths of those under 1 year old to total deaths of those under 5 years old.	Total deaths per 1,000 inhabitants of those under 1 year old.	Percentage of deaths of those under 5 years old to total births, excluding stillbirths.	Total deaths per 1,000 inhabitants of those under 5 years of age.
1876.....	1,041	4,160	25.00	4,289	24.27	1,563	66.60	6.60	36.58	9.91
1877.....	1,133	4,208	26.92	3,811	29.73	1,856	61.01	6.97	48.70	11.43
1878.....	1,165	4,231	27.53	3,912	29.78	1,806	64.50	6.96	46.16	10.80
1879.....	1,206	4,309	27.98	3,816	31.60	2,020	59.70	6.99	52.93	11.72
1880.....	1,305	4,207	23.39	4,095	31.86	1,958	71.75	7.35	47.81	11.02
1881.....	1,041	4,136	25.17	3,595	28.96	1,678	62.04	5.68	43.00	9.17
1882.....	1,237	4,571	27.06	3,391	36.48	1,873	66.00	6.55	55.23	9.92
1883.....	1,079	4,286	25.18	3,116	34.95	1,669	65.25	5.67	53.56	8.69
1884.....	1,205	4,814	25.03	3,224	37.38	2,034	59.24	6.03	63.09	10.17
1885.....	1,301	4,998	26.03	3,334	39.05	1,957	66.48	6.55	58.69	9.78
1886.....	1,160	4,674	25.24	3,516	33.56	1,703	69.29	5.66	48.43	8.30
1887.....	1,280	4,665	27.43	3,728	34.33	1,791	71.47	6.09	48.04	8.53
1888.....	1,355	5,040	26.80	3,670	36.91	1,935	70.00	6.00	52.72	8.35
1889.....	1,468	5,152	28.49	4,001	36.69	2,089	70.27	5.87	52.21	8.26
1890.....	1,429	5,564	25.64	4,070	35.06	2,067	69.03	5.70	50.78	8.28
1891.....	1,433	5,720	25.00	4,344	32.97	2,070	69.22	5.73	47.44	8.40
1892.....	1,571	6,098	25.76	4,614	34.04	2,183	71.96	6.64	47.31	8.28
1893.....	1,744	6,452	27.50	4,458	39.79	2,361	75.56	6.23	52.96	7.80
1894.....	1,646	6,039	27.25	5,042	32.64	2,222	73.63	5.77	44.07	6.45
1895.....	1,287	5,565	22.57	4,797	26.20	1,775	70.82	4.67	37.00	6.45
Total Mean.....	26,056	98,979	26.32	78,823	33.06	38,610	67.48	6.23	49.00	9.24

TABLE XXV.—Deaths of persons over 60 years of age, less those by violence.

Year.	January.			February.			March.			April.			May.			June.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1881.....	54	24	78	37	20	57	47	21	68	49	25	74	38	22	60	30	17	47
1882.....	56	21	77	37	36	73	53	17	70	43	32	75	38	25	63	30	24	54
1883.....	45	23	68	42	21	63	56	30	86	57	17	74	51	17	68	36	20	56
1884.....	50	24	74	53	22	75	64	25	89	53	30	83	32	20	52	34	17	51
1885.....	51	26	77	68	31	99	72	36	108	48	31	79	34	32	66	53	28	81
1886.....	50	17	67	51	43	94	68	30	98	56	26	82	42	28	70	39	21	60
1887.....	57	21	78	43	26	69	54	17	71	47	31	78	33	25	58	40	22	62
1888.....	68	30	98	66	22	88	72	29	101	52	19	71	56	22	78	39	27	66
1889.....	57	30	87	51	21	72	69	26	95	68	34	102	45	26	71	47	20	67
1890.....	77	33	110	64	20	84	67	35	102	53	27	80	53	26	79	52	25	77
1891.....	61	28	89	52	17	69	86	37	123	149	51	200	59	26	85	56	20	76
1892.....	120	54	174	75	33	108	86	28	114	76	25	101	65	25	90	62	15	77
1893.....	91	29	120	79	27	106	113	28	141	80	29	109	70	88	158	57	19	76
1894.....	89	24	113	80	26	106	90	34	124	86	28	114	48	17	65	71	40	111
1895.....	76	16	92	67	38	105	99	42	141	45	40	85	61	59	120	65	30	95
Total....	1,002	400	1,402	865	403	1,268	1,096	435	1,531	962	443	1,407	725	458	1,183	711	345	1,056

Year.	July.			August.			September.			October.			November.			December.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1880.....	29	18	47	20	18	38	39	21	60	44	18	62	27	16	43	45	21	66
1881.....	43	20	63	38	26	64	26	18	44	52	21	73	44	21	65	49	22	71
1882.....	34	21	55	31	22	53	26	25	51	31	29	60	29	17	46	37	21	58
1883.....	51	19	70	38	28	66	33	16	49	32	16	48	49	17	66	64	24	88
1884.....	41	31	72	29	25	54	32	16	48	46	17	63	46	26	72	39	31	70
1885.....	61	31	92	48	23	71	38	28	66	38	17	55	35	26	61	38	21	59
1886.....	49	31	80	42	27	69	64	25	89	44	17	61	47	26	73	47	25	72
1887.....	59	30	89	40	26	66	48	32	80	58	18	76	45	30	75	49	22	71
1888.....	52	24	76	43	22	65	33	16	49	39	21	60	37	22	59	59	22	81
1889.....	52	29	81	40	23	63	39	23	62	60	28	88	47	27	74	44	22	66
1890.....	41	26	67	36	19	55	49	17	66	52	29	81	65	19	84	76	35	111
1891.....	50	28	78	61	24	85	46	25	71	58	14	72	56	20	76	88	34	122
1892.....	88	38	126	81	24	105	62	25	87	72	33	105	65	24	89	67	35	102
1893.....	70	24	94	63	18	81	46	16	62	64	24	88	70	20	90	110	34	144
1894.....	71	33	104	60	18	78	57	19	76	55	27	82	53	23	76	70	29	99
Total....	791	403	1,194	670	343	1,013	638	322	960	745	329	1,074	715	334	1,049	882	398	1,280

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TABLE XXVI.—Deaths from diarrheal diseases during eighteen years, from January 1, 1877, to December 31, 1894, inclusive.

Month.	1877.			1878.			1879.			1880.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
January.....	2	3	5	6	.....	6	6	1	7	3	2	5
February.....	1	2	3	1	.....	2	4	2	6	3	4	7
March.....	6	3	9	6	.....	2	8	2	2	4	.....	4
April.....	.....	.....	.....	3	.....	6	3	2	5	4	2	6
May.....	3	1	4	52	19	51	7	2	9	15	18	33
June.....	46	32	78	46	47	93	78	51	129	54	57	111
July.....	59	83	142	33	76	109	72	73	145	33	42	75
August.....	39	53	92	30	52	82	31	35	66	11	26	37
September.....	16	16	32	7	15	22	17	30	47	11	17	28
October.....	9	11	20	12	8	20	7	16	23	7	9	16
November.....	4	5	9	3	1	4	2	6	8	4	4	8
December.....	3	3	6	3	2	5	2	2	4	3	2	5
Total.....	188	212	400	182	226	408	229	222	451	152	183	335

Month.	1881.			1882.			1883.			1884.			1885.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
January.....	3	2	5	2	4	6	.....	1	1	1	.....	1	3	2	5
February.....	4	3	7	4	2	6	2	.....	2	1	2	3	1	2	3
March.....	3	3	6	1	7	1	3	4	3	5	8	2	4	4	6
April.....	5	2	7	4	4	8	2	3	5	3	1	4	.....	4	4
May.....	5	5	10	5	3	8	5	3	8	1	7	8	3	2	5
June.....	39	28	67	46	43	89	34	25	59	49	50	99	57	43	100
July.....	72	70	142	64	80	144	69	61	130	40	46	86	71	71	142
August.....	51	63	114	29	40	69	39	40	79	48	37	85	27	31	58
September.....	40	32	72	5	26	31	9	23	32	35	31	66	19	14	33
October.....	17	20	37	7	9	16	4	5	9	8	12	20	12	6	18
November.....	12	10	22	6	7	13	5	6	11	5	7	12	2	4	6
December.....	1	2	3	2	3	5	3	1	4	4	3	7	.....	2	2
Total.....	252	237	489	180	222	402	173	171	344	198	201	399	197	185	382

Month.	1886.			1887.			1888.			1889.			1890.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
January.....	2	0	2	2	0	2	4	0	4	2	0	2	2	2	4
February.....	3	1	4	2	3	5	3	2	5	3	3	6	2	2	6
March.....	3	.....	3	3	0	3	3	2	5	4	1	5	2	2	4
April.....	0	2	2	2	5	7	3	2	7	2	1	3	3	3	6
May.....	3	1	4	0	9	9	1	4	5	2	3	5	16	22	38
June.....	31	20	51	68	69	137	41	49	90	58	41	99	66	76	142
July.....	46	46	92	68	63	131	76	65	141	65	57	122	41	46	87
August.....	35	43	78	28	35	63	56	71	127	52	43	95	27	38	65
September.....	19	15	34	18	15	33	25	32	57	11	24	35	22	26	48
October.....	6	10	16	9	9	18	8	12	20	13	7	20	14	7	21
November.....	11	4	15	.....	1	1	8	1	9	2	4	6	4	3	7
December.....	2	3	5	7	2	9	2	2	4	2	1	3	1	2	3
Total.....	161	135	306	207	211	418	232	242	474	216	185	401	200	231	431

Month.	1891.			1892.			1893.			1894.			Total in 18 years.	Mean by months.
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.		
January.....	4	2	6	3	3	6	4	1	5	1	2	3	75	4.2
February.....	4	0	4	2	2	4	6	2	8	2	2	4	85	4.7
March.....	0	0	0	7	2	9	5	1	6	4	3	7	93	5.2
April.....	2	0	2	2	1	3	3	3	6	4	4	8	89	4.9
May.....	4	4	8	4	4	8	8	4	12	7	9	16	241	13.4
June.....	64	56	120	72	61	133	64	45	109	97	80	177	1,883	104.8
July.....	65	67	132	134	127	261	64	80	144	49	44	93	2,318	128.8
August.....	47	36	83	45	47	92	48	36	84	16	35	51	1,420	78.9
September.....	21	31	52	24	20	44	21	21	42	11	4	15	723	40.2
October.....	16	15	31	13	12	25	14	9	23	8	10	18	371	20.6
November.....	5	2	7	3	3	6	2	3	5	1	3	4	153	8.5
December.....	6	5	11	2	2	4	5	1	6	4	2	6	92	5.1
Total.....	238	218	456	311	284	595	244	206	450	204	198	402	7,543	.....

TABLE XXVII.—*Showing deaths from consumption, by sex, color, and months, for nineteen calendar years ended December 31, 1894.*

Year.	January.				February.				March.				April.				May.			
	White.		Colored.		White.		Colored.		White.		Colored.		White.		Colored.		White.		Colored.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1876.....	28	13	6	11	18	14	19	18	17	14	6	12	17	9	16	18	8	14	9	13
1877.....	13	10	6	15	15	19	5	18	12	14	13	10	13	15	12	12	24	10	10	10
1878.....	14	33	20	24	13	19	13	13	18	18	19	15	14	18	20	16	7	14	10	17
1879.....	26	12	6	17	15	14	13	16	15	17	21	16	12	18	17	16	9	10	20	13
1880.....	18	11	18	21	22	18	16	28	14	15	30	19	16	18	14	19	11	22	15	25
1881.....	21	22	14	12	14	15	16	25	17	16	18	26	17	11	22	35	22	13	18	17
1882.....	15	11	14	26	20	11	20	16	24	25	15	20	15	18	13	23	15	17	18	17
1883.....	19	17	13	23	10	15	16	24	28	23	17	26	13	17	15	20	16	12	14	20
1884.....	22	28	12	30	16	14	27	23	16	16	16	16	14	24	8	27	24	8	22	23
1885.....	14	13	24	18	23	20	12	23	16	16	24	14	18	24	21	21	20	12	14	35
1886.....	19	14	13	23	13	15	13	21	17	21	21	20	14	12	22	20	16	12	14	24
1887.....	16	18	15	18	23	10	13	18	21	19	12	24	13	16	17	21	5	10	9	18
1888.....	13	28	8	13	20	18	14	17	21	19	5	30	14	13	13	33	9	11	9	21
1889.....	17	7	15	21	14	14	19	14	11	18	22	21	18	16	16	13	14	13	16	21
1890.....	16	20	21	20	14	16	19	14	22	15	18	20	17	13	19	17	23	5	14	11
1891.....	8	8	24	15	16	14	11	12	16	17	25	24	27	15	20	27	15	15	16	17
1892.....	16	18	17	15	15	12	20	23	14	8	15	18	16	11	22	11	17	4	18	13
1893.....	23	11	14	20	10	15	16	12	13	17	14	13	23	15	11	20	14	16	15	20
1894.....	14	12	21	12	8	11	17	17	20	14	20	18	15	16	13	16	18	17	17	19
Total..	332	296	281	354	299	284	299	352	332	322	331	362	306	299	311	385	277	235	278	354

Year.	June.				July.				August.				September.			
	White.		Colored.		White.		Colored.		White.		Colored.		White.		Colored.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1876.....	19	9	12	11	10	15	15	14	5	7	7	19	11	11	10	9
1877.....	11	8	15	20	7	12	10	20	10	10	9	17	16	9	7	12
1878.....	11	10	11	21	9	14	9	25	16	18	16	18	13	13	10	23
1879.....	15	13	15	26	11	13	13	20	11	10	10	19	14	9	12	19
1880.....	10	10	14	23	10	12	9	14	15	16	8	17	12	12	13	16
1881.....	14	11	16	14	6	14	17	28	15	9	13	19	13	9	15	29
1882.....	14	10	12	24	9	11	9	18	9	11	12	9	11	13	15	18
1883.....	10	9	13	16	14	18	13	13	9	14	11	23	18	12	16	19
1884.....	13	16	16	22	19	20	14	16	17	16	14	9	14	13	10	18
1885.....	9	11	10	24	14	20	18	22	11	15	11	23	16	15	14	20
1886.....	14	11	26	25	13	14	13	18	12	12	15	14	19	12	14	13
1887.....	9	12	16	13	9	13	12	21	8	14	7	14	14	20	12	22
1888.....	5	15	13	11	10	9	17	6	15	5	10	23	14	7	15	25
1889.....	9	11	17	15	12	8	20	23	14	13	19	22	9	8	16	17
1890.....	12	14	14	19	3	12	12	14	13	12	9	17	13	22	12	11
1891.....	14	8	19	15	16	7	13	13	13	12	17	17	13	15	14	10
1892.....	13	14	17	14	14	16	19	13	10	16	15	11	7	10	7	18
1893.....	15	9	13	16	8	7	17	17	10	5	5	17	12	12	16	20
1894.....	7	11	9	11	14	11	12	13	13	3	10	12	12	9	9	11
Total..	224	212	278	340	208	246	262	328	226	218	218	320	251	231	237	230

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TABLE XXVII.—*Showing deaths from consumption, by sex, color, and months, for nineteen calendar years ended December 31, 1894—Continued.*

Year.	October.				November.				December.				Total.			
	White.		Colored.		White.		Colored.		White.		Colored.		White.		Colored.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1876.....	14	14	12	13	17	13	9	21	14	13	7	13	178	146	128	172
1877.....	14	17	8	24	12	13	13	9	18	17	13	14	165	154	121	181
1878.....	9	18	7	10	14	23	8	10	18	15	15	15	156	201	158	207
1879.....	9	13	4	13	14	9	16	16	16	20	11	17	167	158	158	208
1880.....	18	14	14	21	17	11	9	18	17	20	8	14	180	179	166	235
1881.....	17	18	15	17	22	18	13	14	17	20	15	18	195	176	192	254
1882.....	14	14	15	13	12	16	15	16	9	11	21	23	167	168	179	223
1883.....	14	7	18	9	14	19	14	25	21	12	10	23	186	176	169	241
1884.....	13	10	15	14	18	14	16	8	14	13	18	19	200	192	188	225
1885.....	14	15	12	19	12	7	17	14	20	17	10	20	187	185	187	253
1886.....	20	11	15	19	16	17	18	20	22	18	10	15	195	169	194	232
1887.....	18	14	15	9	13	19	16	16	20	12	5	16	169	177	149	210
1888.....	15	21	17	7	11	12	10	15	9	15	14	23	156	163	145	224
1889.....	13	13	11	14	7	17	12	14	24	12	26	19	162	150	209	214
1890.....	23	15	18	21	15	15	15	15	19	15	21	9	190	174	192	188
1891.....	17	15	11	18	23	15	15	14	12	16	13	12	190	157	200	194
1892.....	18	10	9	22	14	11	9	18	17	9	13	10	171	149	181	186
1893.....	11	9	9	20	10	16	15	14	23	23	18	8	172	155	163	197
1894.....	11	17	19	16	16	9	9	18	11	15	19	19	159	145	175	182
Total..	282	265	254	299	277	274	249	295	321	291	247	307	3,345	3,074	3,254	4,026

TABLE XXVIII.—*Deaths from consumption, by ages, during sixteen years ended June 30, 1895.*

Age.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
Under 1 year.....	29	39	101	99	268
1 to 2 years.....	19	23	95	116	253
2 to 3 years.....	10	8	78	93	189
3 to 4 years.....	4	7	39	52	102
4 to 5 years.....	2	0	35	37	74
Total deaths under 5 years.....	64	77	348	397	886
5 to 10 years.....	9	11	84	144	248
10 to 20 years.....	126	261	339	604	1,330
20 to 30 years.....	681	719	678	928	3,006
30 to 40 years.....	602	560	452	523	2,137
40 to 50 years.....	523	375	333	321	1,552
50 to 60 years.....	368	226	228	152	974
60 to 70 years.....	211	171	116	90	588
70 to 80 years.....	86	81	56	62	285
80 to 90 years.....	8	17	14	21	60
90 to 100 years and over.....	1	0	1	6	8
Total.....	2,679	2,498	2,649	3,248	11,074
Total by color.....	5,177		5,897	
Grand total.....	11,074			

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TABLE XXIX.—Total deaths from eighteen different diseases and suicides during twenty fiscal years, from July 1, 1875, to June 30, 1895.

Disease.	1876.					1877.				
	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	171	135	108	165	579	159	149	121	174	603
Typhoid fever.....	29	33	22	14	98	24	30	11	17	82
Apoplexy.....	30	32	22	20	104	40	34	12	24	110
Insanity.....	3	2	3	—	8	10	5	5	3	23
Softening of the brain.....	10	2	4	1	17	15	4	2	1	22
Paralysis, hemiplegia, paraplegia.....	5	6	4	5	20	9	5	6	7	27
Cancer.....	8	30	4	13	55	12	38	3	14	67
Epilepsy.....	8	4	5	4	21	7	5	1	3	16
Diseases of the heart.....	49	36	27	40	152	48	43	33	19	143
Bright's disease.....	14	7	7	5	33	17	5	2	1	25
Rheumatism.....	5	2	1	2	10	2	6	4	3	15
Aneurisms.....	3	1	4	1	9	—	—	2	—	2
Angina pectoris.....	1	2	—	—	3	6	1	—	2	9
Gastritis.....	12	16	7	3	38	10	4	3	3	20
Cirrhosis of liver.....	8	2	1	—	11	8	2	—	2	12
Dropsy.....	13	12	22	13	60	10	17	10	8	45
Diabetes.....	—	—	—	1	1	1	1	1	1	4
Hernia.....	4	1	3	1	9	1	1	2	—	4
Suicides.....	3	2	—	—	5	3	2	—	—	5

Disease.	1878.					1879.					1880.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	154	180	153	202	689	171	183	157	205	716	166	168	173	239	746
Typhoid fever.....	38	29	20	14	101	27	18	19	10	74	20	23	19	22	84
Apoplexy.....	33	24	10	22	89	24	21	15	16	76	30	15	10	16	71
Insanity.....	4	—	1	1	6	7	2	3	—	12	9	5	1	2	17
Softening of the brain.....	9	11	1	—	21	8	7	1	5	21	4	1	3	3	11
Paralysis hemiplegia, paraplegia.....	17	19	10	7	53	22	12	7	9	50	28	23	10	21	82
Cancer.....	19	32	4	12	67	12	48	3	23	86	21	29	5	16	71
Epilepsy.....	2	3	—	2	7	4	2	1	1	8	3	—	2	4	9
Diseases of the heart.....	38	45	23	31	137	49	30	21	25	125	43	33	23	28	127
Bright's disease.....	18	5	6	7	36	5	4	7	5	21	17	9	4	5	35
Rheumatism.....	3	—	2	—	5	—	4	3	4	11	5	2	2	2	13
Aneurisms.....	5	—	1	1	7	6	—	2	—	8	5	—	5	3	13
Angina pectoris.....	7	2	—	2	11	4	—	2	—	6	2	3	2	3	10
Gastritis.....	6	8	5	2	21	8	4	3	5	20	9	6	3	7	25
Cirrhosis of liver.....	1	2	1	—	4	2	2	1	—	5	8	2	—	2	12
Dropsy.....	18	19	29	27	93	23	24	31	27	105	11	17	22	10	60
Diabetes.....	4	—	—	—	4	5	1	1	1	8	3	1	—	—	4
Hernia.....	2	1	1	—	4	—	5	2	—	7	3	4	—	—	7
Suicides.....	6	—	—	—	6	4	3	—	—	7	16	3	2	—	21

Disease.	1881.					1882.					1883.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	194	173	163	229	759	193	180	180	251	804	160	170	174	226	730
Typhoid fever.....	24	20	13	10	67	37	23	23	23	120	18	31	26	17	92
Apoplexy.....	40	23	19	17	99	31	23	10	19	83	26	31	11	16	84
Insanity.....	26	7	3	2	38	28	4	4	7	43	31	8	6	6	51
Softening of the brain.....	8	1	3	3	15	6	5	4	2	17	6	3	—	3	12
Paralysis hemiplegia, paraplegia.....	28	17	9	14	68	18	6	12	19	55	16	18	5	6	45
Cancer.....	17	47	1	22	87	21	34	8	17	80	17	36	7	19	79
Epilepsy.....	5	2	4	1	12	6	3	7	5	21	7	1	4	1	13
Diseases of the heart.....	43	38	36	33	150	74	44	28	39	185	78	58	83	36	205
Bright's disease.....	12	10	9	6	37	21	15	10	11	57	12	9	7	5	33
Rheumatism.....	10	7	3	4	24	4	9	—	6	19	9	15	7	7	38
Aneurisms.....	5	1	5	—	11	3	2	2	—	7	6	—	2	2	10
Angina pectoris.....	5	3	—	—	8	5	2	1	1	9	5	4	—	2	11
Gastritis.....	12	11	2	2	27	7	6	2	7	22	16	6	—	7	29
Cirrhosis of liver.....	11	1	2	—	14	4	4	1	—	9	6	3	1	—	10
Dropsy.....	7	12	11	12	42	5	2	13	17	37	10	7	14	11	42
Diabetes.....	3	1	—	—	4	—	1	—	—	1	5	—	—	1	6
Hernia.....	3	3	1	—	7	—	2	3	—	5	3	2	—	1	6
Suicides.....	7	4	—	—	11	10	3	1	1	15	16	3	1	1	21

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TABLE XXIX.—Total death, from eighteen different diseases and suicides during twenty fiscal years, from July 1, 1875, to June 30, 1895—Continued.

Disease.	1884					1885					1886				
	White		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	195	188	183	253	819	195	182	192	219	788	180	174	191	251	796
Typhoid fever.....	32	21	13	10	76	48	35	14	27	124	46	35	24	23	128
Apoplexy.....	44	36	16	18	114	43	24	24	10	101	40	34	22	29	125
Insanity.....	32	6	12	6	56	57	13	17	7	94	68	16	11	6	101
Softening of the brain.....	8	5	...	2	15	7	5	2	1	15	9	5	1	2	17
Paralysis, hemiplegia, paraplegia.....	21	23	3	11	58	20	27	9	17	73	19	17	13	15	64
Cancer.....	22	44	4	20	90	25	61	10	23	119	27	53	4	19	103
Epilepsy.....	2	...	3	...	5	3	1	1	3	8	4	2	1	2	9
Diseases of the heart.....	78	51	33	60	222	65	78	40	52	235	72	48	41	74	235
Bright's disease.....	22	11	10	6	49	25	9	10	9	53	19	13	13	8	53
Rheumatism.....	15	9	6	6	36	11	10	7	6	34	21	6	4	3	34
Aneurisms.....	5	4	2	2	13	2	1	8	...	11	8	...	2	2	12
Angina pectoris.....	3	5	1	...	9	4	2	1	...	7	4	1	1	1	7
Gastritis.....	11	8	8	3	30	13	10	4	4	31	11	16	5	5	37
Cirrhosis of liver.....	2	2	...	2	6	9	5	1	...	15	9	5	2	1	17
Dropsy.....	4	12	12	11	39	10	8	8	11	37	9	5	11	13	38
Diabetes.....	3	1	...	...	4	6	3	1	...	10	5	6	1	...	12
Hernia.....	3	3	2	...	8	1	...	4	...	5	4	2	2	...	8
Suicides.....	10	1	1	...	12	11	2	...	...	13	13	1	2	1	17

Disease.	1887.					1888.					1889.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	189	169	167	211	736	164	186	129	223	702	157	148	188	204	697
Typhoid fever.....	32	40	24	20	116	47	48	37	36	168	53	43	41	33	170
Apoplexy.....	46	32	17	20	115	66	30	19	23	138	46	22	22	26	116
Insanity.....	52	13	18	9	92	77	16	13	11	117	72	18	10	20	110
Softening of the brain.....	8	5	2	1	16	4	5	1	...	10	9	6	4	1	20
Paralysis, hemiplegia, paraplegia.....	12	10	14	10	46	16	18	17	12	63	20	22	14	20	76
Cancer.....	25	55	8	26	114	27	47	4	22	100	26	73	2	18	119
Epilepsy.....	2	2	2	2	8	6	6	4	2	18	...	3	4	1	8
Diseases of the heart.....	66	77	45	53	241	81	68	58	66	273	93	61	49	64	267
Bright's disease.....	19	14	7	9	49	18	17	10	15	60	20	6	8	5	39
Rheumatism.....	13	13	3	7	36	17	18	5	13	53	14	11	6	3	34
Aneurisms.....	3	1	1	...	5	5	2	4	2	13	3	2	3	2	10
Angina pectoris.....	3	1	1	...	5	5	1	2	...	8	5	2	1	2	6
Gastritis.....	14	10	5	5	34	18	15	2	6	41	14	16	4	9	43
Cirrhosis of liver.....	10	3	1	1	15	9	4	2	1	16	9	...	2	1	12
Dropsy.....	4	8	8	10	30	8	7	6	10	31	4	7	6	8	25
Diabetes.....	7	3	2	1	13	2	3	1	1	7	5	5	1	1	12
Hernia.....	2	1	2	1	6	2	1	1	...	4	3	...	6	...	9
Suicides.....	17	4	2	1	24	13	5	...	...	18	14	...	1	...	15

Disease.	1890.					1891.					1892.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	183	154	209	210	756	182	168	202	197	749	185	157	194	178	714
Typhoid fever.....	66	52	43	47	208	64	65	40	39	208	70	37	39	37	183
Apoplexy.....	48	28	14	23	113	40	32	13	25	110	66	38	19	26	149
Insanity.....	74	20	18	11	123	74	17	9	10	110	31	11	4	5	51
Softening of the brain.....	9	6	7	1	23	6	1	4	3	14	10	7	7	2	26
Paralysis, hemiplegia, paraplegia.....	18	24	10	17	69	22	23	11	28	84	35	40	22	24	121
Cancer.....	26	66	6	23	121	31	59	10	31	131	35	52	6	18	111
Epilepsy.....	4	5	5	1	15	12	3	4	7	26	13	2	5	2	22
Diseases of the heart.....	94	66	51	62	273	101	81	69	73	324	102	95	65	65	327
Bright's disease.....	23	12	16	7	58	29	20	9	5	63	23	20	14	12	69
Rheumatism.....	10	11	8	6	35	18	11	8	12	49	11	13	10	17	51
Aneurisms.....	6	1	3	2	12	7	1	1	1	10	9	2	5	...	16
Angina pectoris.....	5	1	...	1	7	11	2	...	1	14	10	3	1	2	16
Gastritis.....	13	17	6	7	43	13	11	6	9	39	18	23	4	8	53
Cirrhosis of liver.....	13	3	1	...	17	5	1	1	...	7	18	3	1	1	23
Dropsy.....	7	8	11	5	31	9	10	8	15	42	4	10	12	6	32
Diabetes.....	5	3	...	1	9	7	5	1	1	14	1	7	...	2	10
Hernia.....	5	6	1	1	13	1	4	...	1	6	4	...	5	...	9
Suicides.....	20	1	1	...	22	27	6	1	2	36	17	6	1	1	25

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TABLE XXIX.—Total deaths from eighteen different diseases and suicides during twenty fiscal years, from July 1, 1875, to June 30, 1895—Continued.

Disease.	1893.					1894.					1895.				
	White.		Colored.		Total.	White.		Colored.		Total.	White.		Colored.		Total.
	M.	F.	M.	F.		M.	F.	M.	F.		M.	F.	M.	F.	
Consumption.....	178	155	155	193	681	156	153	177	189	675	185	140	174	172	671
Typhoid fever.....	82	40	36	29	187	76	45	29	41	191	62	56	33	36	187
Apoplexy.....	88	66	26	29	209	65	53	29	23	170	68	50	21	30	169
Insanity.....	22	12	8	5	47	26	8	2	7	43	23	8	2	4	37
Softening of the brain.....	8	3	5	2	18	6	4	2	2	14	8	9	5	1	23
Paralysis, hemiplegia, paraplegia.....	28	20	18	21	87	31	28	14	21	94	29	17	19	33	98
Cancer.....	41	75	9	27	152	47	52	13	19	131	40	72	5	23	140
Epilepsy.....	13	6	9	12	40	22	2	7	1	32	16	5	9	5	35
Diseases of the heart.....	115	87	70	72	345	107	89	71	61	328	123	69	63	89	344
Bright's disease.....	33	16	10	4	63	19	8	12	10	49	11	16	8	3	38
Rheumatism.....	16	15	10	10	51	10	7	2	6	25	15	12	7	7	41
Aneurisms.....	9	8	3	3	23	2	5	1	8	3	2	2	5	6	24
Angina pectoris.....	6	6	2	3	17	7	6	1	1	14	9	4	5	6	24
Gastritis.....	8	8	12	8	36	14	24	7	5	50	16	14	6	4	40
Cirrhosis of liver.....	25	9	4	4	38	24	11	3	4	42	13	6	3	3	25
Dropsy.....	7	6	13	11	37	12	7	4	7	30	2	5	3	7	17
Diabetes.....	10	4	1	1	16	8	3	2	1	14	7	5	2	2	14
Hernia.....	3	4	3	1	11	3	5	6	2	14	1	6	9	2	16
Suicides.....	34	2	1	1	37	31	6	2	2	41	26	5	2	1	34

TABLE XXX.—Deaths from cancers, by color, sex, and nativity, from September 1, 1874, to June 30, 1895.

[illegible]

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TABLE XXXI.—Deaths from cancers of white females from September 1, 1874, to June 30, 1895.

Cancers of—	Married.		Widows.		Single.		Total deaths from cancers, white females
	Deaths from cancers.	Percentage to total deaths of married.	Deaths from cancers.	Percentage to total deaths of widows.	Deaths from cancers.	Percentage to total deaths of single.	
Breast	82	16.24	80	22.60	47	28.10	209
Uterus	232	45.94	113	31.92	29	17.40	374
Ovary	11	2.18	6	1.99	2	1.20	19
Stomach	42	8.32	52	14.69	27	16.20	121
Liver	34	6.73	23	6.50	14	8.40	71
Face, head, neck, mouth, and throat....	16	3.17	25	7.06	10	6.00	51
All others.....	88	17.42	55	15.54	38	22.70	181
Total.....	505	100.00	354	100.00	167	100.00	1,026

TABLE XXXII.—Deaths from cancers of colored females from September 1, 1874, to June 30, 1895.

Cancers of—	Married.		Widows.		Single.		Total deaths from cancers, colored females.
	Deaths from cancers.	Percentage to total deaths of married.	Deaths from cancers.	Percentage to total deaths of widows.	Deaths from cancers.	Percentage to total deaths of single.	
Breast	36	20.30	49	26.90	13	22.80	98
Uterus	81	45.80	75	41.00	19	33.30	175
Ovary	4	2.30	2	1.10	10	.....	6
Stomach	19	10.70	32	17.40	9	15.80	60
Liver	4	2.30	3	1.60	1	1.70	8
Face, head, neck, mouth, and throat....	6	3.40	3	1.60	5	8.90	14
All others.....	27	15.70	19	10.40	10	17.50	56
Total.....	177	100.00	183	100.00	57	100.00	417

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TABLE XXXIII.—Deaths from cancers, by age, color, and sex, with percentages, from September, 1874, to June 30, 1895.

Age.	Color.	Sex.	Cancer of breast.	Cancer of uterus.	Cancer of ovary.	Cancer of stomach.	Cancer of liver.	Cancer of face, head, neck, mouth, and throat.	All other cancers.	Total.
Under 20 years.....	White.....	Male.....	1	1			2	4	8	
		Female.....	1				1	4	9	
	Colored.....	Male.....	1			1		1	2	
		Female.....				2		1	2	
20 to 30 years.....	White.....	Male.....				1		2	4	
		Female.....		4	3	6	1	2	7	
	Colored.....	Male.....				3	2	1	5	
		Female.....	2	9	1	2		1	5	
30 to 40 years.....	White.....	Male.....				6	6	3	10	
		Female.....	12	61	2	5	6	0	19	
	Colored.....	Male.....	1			4		1	1	
		Female.....	10	41	3	6	1	1	8	
40 to 50 years.....	White.....	Male.....				27	8	20	19	
		Female.....	51	116	3	15	18	5	35	
	Colored.....	Male.....				17	2	3	3	
		Female.....	17	44		12	1	3	15	
50 to 60 years.....	White.....	Male.....				48	28	30	39	
		Female.....	66	93	4	32	19	7	55	
	Colored.....	Male.....				8	5	5	13	
		Female.....	28	44	2	9	3	2	6	
60 to 70 years.....	White.....	Male.....				38	11	36	45	
		Female.....	49	63	5	35	17	11	39	
	Colored.....	Male.....				9	4	5	4	
		Female.....	18	19		12	1	3	12	
70 to 80 years.....	White.....	Male.....				29	5	30	24	
		Female.....	28	27	2	25	8	11	16	
	Colored.....	Male.....				7	2	1	3	
		Female.....	13	15		12	1	1	6	
80 to 90 years.....	White.....	Male.....				10	1	10	5	
		Female.....	3	7		3	1	11	1	
	Colored.....	Male.....						1	3	
		Female.....	9	3		5	1	2	2	
90 years and over.....	White.....	Male.....								
		Female.....		2						
	Colored.....	Male.....								
		Female.....								
Total.....	White.....	Male.....				159	61	135	155	510
		Female.....	209	374	19	121	71	52	180	1,926
	Colored.....	Male.....	3			49	15	17	34	118
		Female.....	98	175	6	60	8	14	56	417
Grand total.....			310	549	25	389	155	218	425	2,071
Percentage to total deaths from cancer.			14.92	26.51	1.20	18.78	7.05	10.52	20.53	100.00

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TABLE XXXIV.—Number of deaths from cancers, by color, sex, and age; total number of deaths from all causes, and number of deaths from all causes to one of cancer, from September 1, 1874, to June 30, 1895.

Cause of death.	White.			Colored.			Grand total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Under 20 years:							
Deaths from cancer	14	16	30	5	5	10	40
Deaths from all causes	10,817	10,045	20,862	13,453	13,280	26,733	47,595
Number of deaths from all causes to 1 from cancer ..	772	628		2,691	2,656		
20 to 30 years:							
Deaths from cancer	7	23	30	11	20	31	61
Deaths from all causes	2,171	2,259	4,430	1,774	2,298	4,072	8,502
Number of deaths from all causes to 1 from cancer ..	310	97		121	115	24	
30 to 40 years:							
Deaths from cancer	25	104	129	7	71	78	207
Deaths from all causes	2,411	2,215	4,626	1,499	1,769	3,267	7,893
Number of deaths from all causes to 1 from cancer ..	96	21		214			
40 to 50 years:							
Deaths from cancer	74	243	317	25	92	117	434
Deaths from all causes	2,944	1,947	4,891	1,558	1,415	2,973	7,864
Number of deaths from all causes to 1 from cancer ..	40	8		62	15		
50 to 60 years:							
Deaths from cancer	145	276	421	30	94	124	545
Deaths from all causes	3,074	1,947	5,021	1,331	1,139	2,470	7,491
Number of deaths from all causes to 1 from cancer ..	21	7		44	12		
60 to 70 years:							
Deaths from cancer	131	219	350	22	65	87	437
Deaths from all causes	2,903	2,160	5,063	1,059	1,074	2,133	7,196
Number of deaths from all causes to 1 from cancer ..	22	10		48	16		
70 to 80 years:							
Deaths from cancer	88	117	205	13	48	61	266
Deaths from all causes	2,271	2,072	4,343	879	972	1,851	6,194
Number of deaths from all causes to 1 from cancer ..	26	18		67	20		
80 years and over:							
Deaths from cancer	26	28	54	5	22	27	81
Deaths from all causes	854	1,256	2,110	560	1,058	1,618	3,728
Number of deaths from all causes to 1 from cancer ..	32	45		112	48		
Total deaths from cancer	510	1,026	1,536	118	417	535	2,071
Total deaths from all causes	27,445	23,903	51,348	22,114	23,003	45,117	96,465
Number of deaths from all causes to 1 from cancer ..	54	23		187	55		

TABLE XXXV.—Showing the number of stillbirths, including legitimate and illegitimate, with percentages of each to stillbirths, and of illegitimate to total illegitimate stillborn, by color, for seventeen years, from 1879 to 1895, inclusive.

Year.	Number of stillborn.	Color.		Legitimate.		Illegitimate.		Percentage of legit- imates to total still- births, by color.		Percentage of illegiti- mates to total still- births, by color.		Percentage of illegiti- mate still- born to total illegit- imate still- born, by color.	
		White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.
1879	395	130	265	112	171	18	94	28.4	43.3	4.56	23.8	16.0	84.0
1880	358	119	239	105	159	14	80	29.3	44.4	3.90	22.3	14.9	85.1
1881	370	141	229	125	143	16	86	33.8	38.6	4.30	23.0	15.7	84.3
1882	351	140	211	124	146	16	65	35.3	41.5	4.66	18.6	19.7	80.3
1883	362	154	298	136	139	18	69	37.5	38.4	5.07	19.0	20.7	79.3
1884	351	132	219	123	141	9	78	35.0	40.2	2.57	22.2	10.3	89.7
1885	391	179	212	154	127	25	85	39.4	32.5	6.40	21.7	22.7	77.3
1886	406	164	242	149	138	15	104	40.4	34.9	3.70	25.6	12.6	87.4
1887	406	149	257	127	146	22	111	31.3	36.0	5.40	27.3	16.6	83.4
1888	458	182	276	156	155	26	121	34.1	33.0	5.68	26.4	17.7	82.3
1889	443	157	286	137	163	20	123	30.9	36.8	4.51	28.0	14.0	86.0
1890	474	183	291	172	181	11	110	36.3	34.2	2.32	23.2	9.1	91.0
1891	440	172	268	154	157	18	111	35.0	35.7	4.09	25.2	14.0	86.0
1892	467	182	285	169	180	13	105	36.2	38.6	2.78	22.5	11.0	88.9
1893	475	161	314	144	180	17	134	30.3	37.9	3.58	28.2	11.2	88.8
1894	502	204	358	183	255	21	103	32.6	45.4	3.74	18.3	16.9	83.1
1895	540	201	339	173	172	28	167	32.4	31.8	5.20	30.9	14.4	85.6
Total and mean.	7,249	2,750	4,499	2,443	2,753	307	1,746	34.0	37.8	4.26	23.9	15.1	84.9

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TABLE XXXVI.—Showing the number of legitimate and illegitimate births, with percentages of births to deaths, of stillbirths to births, of illegitimacy to births, and of illegitimacy to total illegitimacy, by color, for seventeen years, from 1879 to 1895, inclusive.

Year.	Number of deaths.	Number of births.	Births by color.		Legitimate.		Illegitimate.		Per cent of births to deaths.	Per cent of stillbirths to births.
			White.	Colored.	White.	Colored.	White.	Colored.		
1879.....	4,309	3,816	2,117	1,699	2,068	1,400	49	290	88.5	10.4
1880.....	4,206	4,095	2,297	1,798	2,241	1,456	56	342	97.3	8.8
1881.....	4,136	3,595	2,014	1,581	1,961	1,274	53	307	86.9	10.2
1882.....	4,571	3,391	1,800	1,591	1,747	1,277	53	314	74.2	10.4
1883.....	4,286	3,116	1,684	1,432	1,631	1,132	53	300	72.7	11.6
1884.....	4,814	3,224	1,747	1,477	1,684	1,196	63	281	66.9	10.9
1885.....	4,998	3,334	1,861	1,473	1,805	1,136	56	337	66.7	11.8
1886.....	4,674	3,516	1,981	1,535	1,916	1,184	65	351	75.2	11.5
1887.....	4,665	3,728	2,092	1,636	2,022	1,288	70	348	79.9	10.9
1888.....	5,040	3,670	2,035	1,635	1,964	1,262	71	373	72.8	12.5
1889.....	5,152	4,001	2,176	1,825	2,098	1,397	78	428	77.6	11.0
1890.....	5,564	4,070	2,246	1,824	2,171	1,341	75	483	73.1	11.6
1891.....	5,720	4,344	2,512	1,831	2,440	1,371	73	460	75.9	10.1
1892.....	6,098	4,614	2,648	1,966	2,581	1,447	67	519	75.6	10.1
1893.....	6,452	4,458	2,585	1,873	2,512	1,368	73	505	69.1	10.6
1894.....	6,039	5,042	3,007	2,035	2,930	1,496	77	539	83.5	11.0
1895.....	5,565	4,794	2,878	1,916	2,774	1,396	104	520	86.1	11.3
Total and mean.	86,289	66,808	37,681	29,127	36,545	22,421	1,136	6,706	77.7	10.9

Year.	Per cent of illegitimacy to total births.	Per cent of legitimacy to total births by color.		Per cent of illegitimacy to total births by color.		Per cent of illegitimacy to total illegitimacy by color.		Per cent of white illegitimacy to white births, and colored illegitimacy to colored births.	
		White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.
1879.....	12.5	54.2	36.7	1.31	7.83	14.0	86.0	2.32	17.60
1880.....	12.0	54.7	35.6	1.38	8.35	14.0	86.0	2.43	19.02
1881.....	12.9	54.6	35.4	1.47	8.54	14.8	85.2	2.33	19.42
1882.....	12.3	51.5	37.7	1.60	9.26	14.4	85.3	2.09	19.73
1883.....	14.1	52.4	36.3	1.74	9.63	15.0	85.0	3.14	20.95
1884.....	13.4	52.2	37.1	2.00	8.70	18.3	81.7	3.60	19.02
1885.....	15.0	54.1	34.7	1.68	10.18	14.3	85.2	3.00	22.88
1886.....	15.2	54.5	33.7	1.85	9.98	15.6	84.4	3.28	22.86
1887.....	14.8	54.3	34.5	1.83	9.33	16.7	83.3	3.34	21.27
1888.....	16.1	53.5	34.4	1.93	10.16	16.0	84.0	3.49	22.18
1889.....	12.7	52.4	34.9	1.93	10.70	15.4	84.6	3.59	23.45
1890.....	13.7	53.3	33.0	1.84	11.90	13.4	86.6	3.34	26.50
1891.....	12.3	56.1	31.5	1.68	10.70	13.7	86.3	2.90	25.12
1892.....	12.7	55.9	31.2	1.45	11.25	11.4	78.6	2.53	26.40
1893.....	12.9	56.3	30.6	1.64	11.30	12.6	87.4	2.82	27.00
1894.....	12.2	58.1	29.6	1.53	10.69	12.5	87.5	2.56	26.46
1895.....	13.0	57.8	29.2	2.17	10.85	16.7	83.3	3.61	27.14
Total and mean.	13.2	54.4	34.4	1.71	9.37	14.6	84.7	2.90	22.76

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TABLE XXXVII.—Deaths from pneumonia during twenty years, from July 1, 1875, to June 30, 1895, inclusive, by years, months, and color.

Year.	July.			August.			September.			October.			November.			December.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76.....	3	3	6	7	11	18	3	6	9	9	15	24	12	16	28	22	20	42
1876-77.....	4	3	7	5	6	11	3	11	14	8	8	16	9	13	22	15	16	31
1877-78.....	4	6	6	2	5	7	1	4	5	3	10	13	7	15	25	6	20	26
1878-79.....	7	13	20	7	10	17	9	10	19	6	10	16	11	20	31	12	17	29
1879-80.....	5	3	8	6	11	17	4	12	16	4	5	9	17	9	26	11	18	29
1880-81.....	5	13	18	2	9	11	2	5	7	2	10	12	10	10	20	17	19	36
1881-82.....	2	4	6	3	7	10	2	5	7	5	6	11	11	9	20	10	29	39
1882-83.....	2	7	9	2	9	11	5	4	9	4	7	11	12	16	28	18	15	33
1883-84.....	1	6	7	3	4	7	2	4	6	7	11	18	10	14	24	34	29	63
1884-85.....	3	5	8	2	3	5	2	4	6	3	7	10	17	12	20	10	14	24
1885-86.....	5	4	9	2	4	6	7	1	8	5	5	10	4	12	16	11	8	19
1886-87.....	3	5	8	5	7	12	4	7	11	6	5	11	9	11	20	16	20	36
1887-88.....	2	3	5	2	2	4	5	9	14	6	6	12	15	8	23	15	12	37
1888-89.....	3	2	5	2	8	10	4	6	10	10	13	23	10	10	20	23	24	37
1889-90.....	2	2	4	4	2	6	...	6	6	12	8	20	13	16	29	13	21	34
1890-91.....	5	4	9	6	10	16	6	9	15	8	8	16	12	14	26	26	26	52
1891-92.....	3	6	9	3	7	10	10	11	21	7	17	24	17	10	27	32	34	66
1892-93.....	6	7	13	7	7	14	12	8	20	13	14	27	11	22	33	12	23	35
1893-94.....	8	7	15	5	5	10	2	9	10	8	15	23	8	20	28	19	47	74
1894-95.....	4	3	7	5	6	11	4	6	10	10	17	27	5	21	26	25	21	46
Total pneumonia.	73	106	179	80	133	213	87	136	223	136	197	333	220	278	498	356	405	761
Total bronchitis.	36	63	99	34	56	90	41	58	99	63	95	158	66	119	185	105	160	265
Total congestion of lungs.....	33	25	58	36	23	59	40	40	80	48	60	108	66	61	127	79	83	162
Total acute lung diseases.....	142	194	336	150	212	362	168	234	402	247	352	599	352	458	810	540	648	1,188

Year.	January.			February.			March.			April.			May.			June.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76.....	15	36	51	23	29	52	40	38	78	22	44	66	15	26	41	2	6	8
1876-77.....	30	28	58	19	42	61	23	31	54	14	19	33	7	8	25	5	13	18
1877-78.....	23	26	49	16	21	37	16	34	50	17	20	37	15	36	51	9	25	34
1878-79.....	22	34	56	20	34	54	30	47	77	19	30	49	4	21	25	3	10	13
1879-80.....	18	23	41	15	22	37	31	30	61	14	25	39	6	20	26	11	8	19
1880-81.....	20	22	42	18	23	41	24	38	62	19	27	46	12	11	23	3	7	10
1881-82.....	18	19	37	22	30	52	19	36	55	20	16	36	15	16	31	8	8	16
1882-83.....	13	23	36	20	23	43	30	31	61	20	24	44	18	10	28	6	5	11
1883-84.....	19	19	38	21	17	38	24	18	42	20	22	42	11	11	22	5	5	10
1884-85.....	11	19	30	19	45	64	24	43	67	21	39	60	13	22	35	4	12	16
1885-86.....	19	17	36	16	26	42	23	29	52	22	29	51	10	13	23	7	7	14
1886-87.....	17	19	36	20	15	35	14	15	29	18	13	31	4	9	13	6	3	9
1887-88.....	28	29	57	26	22	48	29	30	59	22	20	42	16	9	25	3	4	7
1888-89.....	16	27	43	27	27	54	32	28	60	18	18	36	4	10	14	7	2	9
1889-90.....	48	71	119	25	27	52	22	27	49	20	23	43	13	19	32	9	13	22
1890-91.....	23	17	40	17	19	36	44	36	80	86	71	157	11	31	42	14	15	29
1891-92.....	75	64	139	42	45	87	30	37	67	17	21	38	14	9	23	6	10	16
1892-93.....	27	30	57	28	37	65	48	47	95	25	25	50	22	23	45	9	13	22
1893-94.....	29	28	57	39	22	61	32	45	77	22	32	54	11	17	28	2	12	14
1894-95.....	26	24	50	35	33	68	40	35	75	36	24	54	17	17	24	6	9	15
Total pneumonia.	497	575	1,072	468	559	1,027	575	575	1,250	466	542	1,008	228	338	566	125	187	312
Total bronchitis.	130	267	397	129	212	341	157	203	360	125	167	292	75	107	182	41	82	123
Total congestion of lungs.....	141	111	252	102	90	192	108	73	181	91	84	175	51	60	111	41	41	82
Total acute lung diseases.....	768	953	1,721	699	861	1,560	840	951	1,791	682	793	1,475	354	505	859	207	310	517

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TABLE XXXVIII.—Deaths from bronchitis during twenty years, from July 1, 1875, to June 30, 1895, inclusive, by years, months, and color.

Year.	July.			August.			September.			October.			November.			December.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76	1	1	2	3	---	3	1	2	3	2	3	5	4	3	7	5	2	7
1876-77	3	2	5	3	2	5	2	3	5	3	5	8	2	2	4	6	7	13
1877-78	1	---	1	---	---	---	---	---	---	1	1	2	---	2	2	3	4	7
1878-79	1	1	2	2	4	6	3	2	5	3	2	5	3	4	7	6	4	10
1879-80	2	---	2	---	4	4	---	4	4	1	2	3	1	4	5	4	8	12
1880-81	---	4	4	2	4	6	4	5	9	2	4	6	4	6	7	1	5	6
1881-82	---	3	3	1	---	1	1	2	3	4	2	6	4	7	11	2	8	10
1882-83	1	1	2	1	---	1	---	4	4	2	6	8	1	8	9	4	7	11
1883-84	1	1	2	2	3	5	1	3	4	3	5	8	2	11	13	6	14	20
1884-85	1	5	6	2	1	3	2	3	5	2	4	6	1	5	6	4	10	14
1885-86	4	4	8	1	2	3	1	4	5	2	7	9	3	8	11	3	3	6
1886-87	2	4	6	4	4	8	3	5	8	6	9	15	4	11	15	2	7	9
1887-88	1	---	1	1	2	3	3	1	4	1	5	6	4	3	7	5	5	10
1888-89	1	4	5	1	3	4	3	2	5	5	5	10	3	6	9	12	9	21
1889-90	4	4	8	1	3	4	2	1	3	5	2	7	2	10	12	7	11	18
1890-91	2	5	7	3	9	12	4	2	6	3	10	13	4	7	11	6	10	16
1891-92	1	6	7	2	4	6	1	3	4	3	5	8	6	9	15	9	14	23
1892-93	3	7	10	2	6	8	4	7	11	5	6	11	8	7	15	7	11	18
1893-94	4	6	10	1	1	2	5	2	7	7	8	15	6	3	9	8	16	24
1894-95	3	5	8	2	4	6	1	3	4	3	4	7	7	3	10	5	5	10
Total	36	63	99	34	56	90	41	58	99	63	95	158	66	119	185	105	160	265

Year.	January.			February.			March.			April.			May.			June.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76	3	6	9	5	4	9	10	5	15	6	5	11	2	---	2	1	3	4
1876-77	5	4	9	2	10	12	2	5	7	5	1	6	1	---	1	---	3	3
1877-78	4	5	9	3	3	6	3	2	5	3	1	4	2	4	6	2	6	8
1878-79	6	4	10	2	5	7	6	8	14	2	12	14	---	5	5	2	1	3
1879-80	6	6	12	7	14	21	5	14	19	3	8	11	2	5	7	---	7	7
1880-81	4	7	11	6	8	14	4	9	13	3	11	14	2	5	7	1	---	1
1881-82	---	8	8	3	9	12	2	5	7	6	7	13	1	4	5	3	6	9
1882-83	4	5	9	2	9	11	5	7	12	1	5	6	2	6	8	1	5	6
1883-84	9	13	22	9	17	26	6	11	17	4	4	8	2	3	5	---	1	1
1884-85	3	10	13	8	4	12	5	3	8	2	13	15	2	7	9	2	2	4
1885-86	8	8	16	4	12	16	8	13	21	6	9	15	1	4	5	2	4	6
1886-87	2	8	10	8	7	15	7	5	12	4	8	12	5	8	13	2	3	5
1887-88	5	14	19	8	10	18	8	15	23	2	2	4	3	1	4	2	3	5
1888-89	7	14	21	5	14	19	11	8	19	4	11	15	1	2	3	1	2	3
1889-90	6	25	31	6	13	19	11	16	27	9	10	19	9	12	21	2	10	12
1890-91	8	8	16	10	9	19	10	19	29	32	22	54	12	14	26	6	7	13
1891-92	25	22	47	19	20	39	15	11	26	6	11	17	7	10	17	6	4	10
1892-93	11	24	35	11	19	30	16	14	30	12	11	23	11	8	19	3	3	6
1893-94	10	9	19	5	12	17	15	14	29	7	9	16	6	5	11	2	8	10
1894-95	4	7	11	6	13	19	8	9	17	8	7	15	4	4	8	3	4	7
Total	130	207	337	129	212	341	157	203	360	125	167	292	75	107	182	41	82	123

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TABLE XXXIX.—Deaths from congestion of the lungs during twenty years, from July 1, 1875, June 30, 1895, inclusive, by months, years, and color.

Year.	July.			August.			September.			October.			November.			December.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76.....	2	1	3	2	1	3	2	4	6	4	4	2	5	7	1	2	3	3
1876-77.....	1	2	3	1	1	1	1	2	3	1	1	1	1	1	2	2	2	2
1877-78.....	1	1	1	3	3	6	2	1	3	3	3	3	1	4	2	2	4	8
1878-79.....	3	1	4	4	1	5	2	1	3	4	3	7	3	7	10	4	4	8
1879-80.....	4	1	5	1	1	1	5	1	6	1	1	2	6	4	10	10	10	10
1880-81.....	1	3	4	1	2	3	2	4	6	1	3	5	5	6	5	11	11	11
1881-82.....	1	1	1	1	1	2	2	1	3	3	4	7	4	4	8	1	5	5
1882-83.....	2	2	4	2	3	5	2	1	3	1	3	4	1	1	2	4	7	11
1883-84.....				3	3	3	3	3	2	3	5	4	1	5	1	3	4	4
1884-85.....	3	1	3	2	2	2	4	4	2	3	5	2	3	5	5	6	11	11
1885-86.....	1	1	2	3	3	3	3	3	1	5	6	4	2	6	2	3	5	5
1886-87.....	1	2	3	2	2	4	3	3	5	1	6	3	1	4	4	3	7	7
1887-88.....	2	1	3	1	1	2	6	8	1	1	2	3	4	7	4	1	5	5
1888-89.....	1	1	1	3	2	5	1	1	4	8	12	3	5	8	3	3	6	6
1889-90.....	3	2	5	2	2	2	2	1	3	8	1	9	1	2	3	4	7	7
1890-91.....	2	2	4	2	1	3	2	1	2	1	1	1	2	2	4	2	6	8
1891-92.....	3	2	5	2	2	2	1	1	2	5	3	8	7	5	12	10	4	14
1892-93.....				2	1	3	7	2	9	6	6	11	6	5	11	8	13	21
1893-94.....	2	1	3	2	2	2	1	1	2	1	1	2	5	5	10	10	2	12
1894-95.....	1	3	4	3	3	3	3	4	7	3	7	10	1	4	5	5	5	10
Total.....	33	25	58	36	23	59	40	40	80	48	60	108	66	61	127	79	83	162

Year.	January.			February.			March.			April.			May.			June.		
	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.	W.	C.	T.
1875-76.....	1	3	4	3	4	7	3	5	8	8	2	10	1	1	2	2	2	2
1876-77.....	7	4	11	5	1	6	3	3	6	2	2	5	2	1	3	2	1	4
1877-78.....	5	2	7	5	1	6	6	2	8	1	4	5	3	4	7	3	1	4
1878-79.....	6	6	12	4	8	12	5	4	9	3	6	9	2	2	4	2	1	3
1879-80.....	6	2	8	9	7	16	1	2	3	2	6	8	2	2	2	3	3	3
1880-81.....	4	2	6	6	6	12	2	5	7	1	1	1	3	1	4	3	3	6
1881-82.....	7	4	11	5	5	10	7	3	10	6	2	8	1	7	8	4	4	4
1882-83.....	6	6	12	1	1	2	4	3	7	4	5	9	3	3	6	1	3	4
1883-84.....	6	10	16	1	6	7	8	1	9	2	3	5	2	1	3	5	3	8
1884-85.....	10	5	15	7	5	12	6	1	7	3	5	8	1	1	2	5	5	5
1885-86.....	1	6	7	4	4	8	2	1	3	2	4	6	2	2	3	2	5	5
1886-87.....	11	4	15	3	3	6	4	2	6	6	5	11	2	2	4	2	4	4
1887-88.....	8	3	11	5	5	10	4	6	10	2	4	6	4	4	4	2	4	4
1888-89.....	4	3	7	4	2	6	5	5	10	2	2	4	2	3	5	4	4	4
1889-90.....	10	7	17	1	2	3	5	3	8	2	1	3	6	3	9	2	4	4
1890-91.....	3	6	9	2	3	5	10	2	12	12	34	4	5	9	3	3	6	6
1891-92.....	18	11	29	13	6	19	10	7	17	3	6	9	4	4	8	3	6	6
1892-93.....	20	6	26	9	8	17	7	6	13	4	4	8	6	6	12	4	1	5
1893-94.....	5	11	16	6	5	11	11	5	16	3	3	6	2	4	6	2	2	2
1894-95.....	3	10	13	9	8	17	5	7	12	13	7	20	5	6	11	2	1	3
Total.....	141	111	252	102	90	192	108	73	181	91	84	175	51	60	111	41	41	82

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TABLE XL.—Showing the mean daily dew-point, relative humidity, and the number of deaths from acute lung diseases in each month for fourteen years, from 1882 to 1895, inclusive.

Year.	July.			August.			September.			October.		
	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.
1882.....	64.6	67.8	10	64.8	70.8	13	66.9	74.3	13	53.2	73.4	24
1883.....	63.1	67.1	15	64.6	75.2	17	64.6	77.1	16	53.2	77.9	23
1884.....	64.8	68.9	9	59.6	67.9	15	55.9	74.3	13	49.0	76.9	31
1885.....	63.5	72.3	17	65.1	75.1	10	60.3	69.7	15	47.6	68.3	21
1886.....	65.6	68.8	19	63.7	73.7	12	55.3	71.2	16	47.4	78.6	25
1887.....	64.4	74.4	17	63.9	75.0	24	59.7	73.4	22	46.5	70.0	32
1888.....	69.6	71.9	9	63.0	72.7	8	55.0	83.8	26	42.5	65.9	20
1889.....	63.7	77.0	11	67.1	79.6	19	58.1	83.8	16	43.1	76.8	45
1890.....	67.5	80.4	17	63.5	79.0	12	57.9	81.3	12	43.3	76.5	35
1891.....	63.1	71.2	20	63.8	77.7	31	59.6	81.7	23	46.4	76.4	30
1892.....	62.3	96.7	21	66.2	81.7	18	62.4	82.8	27	43.3	73.5	40
1893.....	66.3	76.5	23	65.1	73.5	25	55.7	74.4	40	42.0	68.0	49
1894.....	63.0	67.0	28	61.2	57.2	14	56.0	76.0	19	46.8	77.0	40
1895.....	64.1	68.0	19	63.4	75.5	20	64.2	76.9	21	47.6	76.2	44
Total.....	905.6	1028.0	235	895.0	1043.8	238	831.6	1070.1	279	651.9	1032.4	459
Mean.....	64.7	73.5	16.6	64.0	74.5	17.0	60.0	76.4	19.9	46.6	73.6	32.8

Year.	November.			December.			January.			February.		
	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.
1882.....	39.7	74.9	39	34.5	76.6	54	27.4	80.9	56	31.5	76.6	74
1883.....	33.6	71.6	39	25.3	67.7	55	24.3	81.6	57	29.0	73.5	56
1884.....	37.6	71.0	42	29.2	75.6	87	23.2	77.9	76	34.2	78.5	71
1885.....	34.6	70.3	40	29.7	79.3	49	24.0	71.0	58	18.6	72.3	88
1886.....	37.7	76.2	33	27.6	69.1	30	23.7	81.4	59	24.8	76.2	66
1887.....	32.9	63.3	39	26.2	73.7	52	22.6	67.9	61	28.6	70.6	56
1888.....	30.3	60.1	37	27.2	69.7	42	21.2	73.6	87	27.8	75.5	76
1889.....	37.9	75.0	37	25.4	68.5	74	28.8	74.3	71	19.6	69.2	79
1890.....	37.8	78.2	44	34.0	72.8	60	32.7	71.7	211	33.0	74.5	94
1891.....	35.5	71.4	41	23.3	70.7	76	27.5	74.5	65	31.9	74.4	60
1892.....	33.5	72.9	44	30.5	69.7	103	22.8	73.2	215	27.0	73.7	145
1893.....	33.7	69.3	59	24.0	74.0	64	15.0	71.0	118	24.0	68.0	112
1894.....	33.5	73.5	47	27.8	71.2	83	29.4	76.6	92	26.2	73.0	89
1895.....	32.1	68.3	41	27.8	75.4	66	24.4	77.0	74	14.0	62.8	104
Total.....	489.4	996.0	581	388.9	1014.0	895	347.0	1052.6	1,300	370.2	1005.8	1,170
Mean.....	35.0	71.1	41.5	27.8	72.0	64.0	20.4	75.1	92.6	22.1	71.8	83.6

Year.	March.			April.			May.			June.		
	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.	Dew point.	Relative humidity.	Deaths.
1882.....	33.5	69.3	72	39.3	68.1	57	48.3	70.9	44	60.0	64.5	29
1883.....	25.8	65.9	80	42.1	74.0	59	50.2	65.0	32	62.9	70.1	21
1884.....	33.1	72.9	68	36.6	62.1	55	51.4	66.0	30	61.6	71.4	19
1885.....	24.0	67.0	82	37.7	59.4	83	50.0	68.1	46	62.9	70.1	25
1886.....	32.0	70.8	76	46.9	75.7	72	55.3	80.4	30	64.2	83.2	25
1887.....	23.9	59.6	47	37.1	61.7	54	56.0	69.3	30	59.7	68.0	18
1888.....	27.2	69.4	92	37.3	59.1	52	53.5	74.5	33	61.8	70.0	14
1889.....	31.6	68.2	89	42.3	70.9	55	54.5	73.2	22	62.1	77.2	16
1890.....	28.5	67.2	89	40.1	63.6	65	53.2	72.8	65	66.7	68.9	37
1891.....	28.1	72.8	121	40.6	61.9	245	49.0	68.4	140	61.4	74.0	48
1892.....	26.8	70.1	120	38.7	64.8	64	52.0	69.2	48	66.2	75.0	32
1893.....	28.0	65.0	138	42.0	67.0	81	50.0	68.7	82	66.0	73.0	33
1894.....	35.0	65.6	122	39.2	63.2	76	54.1	69.9	45	61.0	67.6	26
1895.....	27.4	61.6	104	39.8	64.4	85	52.0	72.6	43	63.9	72.3	25
Total.....	395.9	945.4	1,300	559.7	910.9	1,103	721.5	987.3	689	876.4	1005.3	318
Mean.....	28.3	67.5	93.0	40.0	65.6	78.8	51.1	70.5	49.3	62.6	71.8	22.5

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TABLE XLI.—*Showing the percentage of deaths from pneumonia, bronchitis, and congestion of the lungs; also from total acute lung diseases to total population, and the total deaths therefrom since 1876 to the year 1895, inclusive.*

Year.	Total population in each year.	Total deaths from all causes in each year.	Deaths from pneumonia in each year.	Percentage of deaths from pneumonia to total deaths.	Percentage of deaths from pneumonia to total population.	Deaths from bronchitis in each year.	Percentage of deaths from bronchitis to total deaths.
1876.....	157,600	4,160	423	10.2	2.67	77	1.85
1877.....	162,375	4,208	350	8.3	2.21	78	1.85
1878.....	167,300	4,231	337	8.0	2.13	50	1.18
1879.....	172,377	4,309	406	9.4	2.37	98	2.28
1880.....	177,638	4,207	328	7.8	1.90	107	2.55
1881.....	183,060	4,136	328	7.9	1.86	98	2.37
1882.....	188,653	4,571	320	7.0	1.70	88	1.92
1883.....	191,980	4,286	314	7.3	1.60	87	2.02
1884.....	196,490	4,814	317	6.6	1.60	131	2.73
1885.....	201,110	4,998	354	7.0	1.77	101	2.00
1886.....	205,840	4,673	286	6.1	1.40	121	2.59
1887.....	210,680	4,665	251	5.4	1.20	128	2.75
1888.....	215,630	5,040	323	6.4	1.40	104	2.06
1889.....	222,830	5,152	331	6.4	1.32	134	2.60
1890.....	232,460	5,564	416	7.5	1.76	181	3.25
1891.....	242,520	5,720	517	9.0	2.06	227	3.97
1892.....	253,010	6,098	527	8.6	2.03	219	3.58
1893.....	260,800	6,452	475	7.3	1.66	216	3.35
1894.....	265,600	6,039	424	7.0	1.49	169	2.80
1895.....	270,514	5,565	413	7.4	1.52	122	2.19
Total and mean.....	4,178,467	98,888	7,440	7.5	1.78	2,527	2.55

Year.	Percentage of deaths from bronchitis to total population.	Deaths from congestion of lungs in each year.	Percentage of deaths from congestion of lungs to total deaths.	Percentage of deaths from congestion of lungs to total population.	Total deaths from acute lung diseases in each year.	Percentage of deaths from acute lung diseases to total deaths.	Percentage of deaths from acute lung diseases to total population.
1876.....	0.50	59	1.42	0.31	559	13.5	3.5
1877.....	.48	44	1.05	.27	472	11.2	2.9
1878.....	.30	56	1.32	.33	443	10.5	2.7
1879.....	.67	86	2.02	.59	590	13.7	3.4
1880.....	.60	74	1.82	.41	509	12.1	2.9
1881.....	.53	68	1.64	.37	494	11.9	2.7
1882.....	.46	77	1.70	.49	485	10.6	2.6
1883.....	.45	69	1.60	.36	470	10.0	2.5
1884.....	.65	68	1.42	.34	516	10.7	2.6
1885.....	.50	79	1.58	.39	534	10.6	2.7
1886.....	.60	56	1.20	.27	463	10.0	2.3
1887.....	.60	73	1.56	.35	452	9.7	2.2
1888.....	.46	69	1.30	.30	496	9.8	2.2
1889.....	.53	69	1.34	.30	534	10.3	2.1
1890.....	.72	73	1.31	.30	670	12.0	2.7
1891.....	.90	98	1.71	.39	842	14.7	3.4
1892.....	.81	131	2.15	.50	877	14.2	3.4
1893.....	.76	136	2.11	.48	827	12.8	2.9
1894.....	.59	88	1.45	.31	681	11.2	2.4
1895.....	.44	115	2.07	.41	680	11.7	2.4
Total and mean.....	.60	1,588	1.60	.38	11,564	11.7	2.8

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TABLE XLII.—Comparative statement of deaths of persons 60 years of age and over, with percentages to total deaths and to total population, for eleven years from 1884 to 1895.

Year.	Total population.	Total deaths.	Deaths of persons 60 years of age and over, less those by violence.	Percent- age of deaths of those 60 years and over to total deaths.	Number of deaths of those 60 years and over to 1,000 popula- tion.	Number of deaths of all ages to 1,000 of popula- tion.
1884-85.....	201,110	4,998	889	17.80	4.4	24.99
1885-86.....	205,840	4,674	875	18.72	4.2	22.80
1886-87.....	210,680	4,665	860	18.43	4.1	22.21
1887-88.....	215,630	5,040	959	19.03	4.2	22.40
1888-89.....	222,830	5,152	884	17.14	3.6	20.60
1889-90.....	232,460	5,564	966	17.36	3.8	22.25
1890-91.....	242,520	5,720	1,137	19.88	4.5	22.88
1891-92.....	253,010	6,008	1,206	19.78	4.6	23.45
1892-93.....	260,800	6,452	1,292	20.00	5.5	22.64
1893-94.....	265,600	6,039	1,192	19.74	4.2	21.19
1894-95.....	270,514	5,565	1,131	20.32	4.1	20.57
Aggregate.....	2,580,994	59,967	11,391	19.01	4.4	23.23

TABLE XLIII.—Comparative statement exhibiting general results of marriages, births, and deaths during the six years ended June 30, 1895.

Subject.	Year ended June 30—					
	1890.	1891.	1892.	1893.	1894.	1895.
Marriages.....	1,316	1,289	1,148	1,424	1,496	2,391
Births.....	4,070	4,344	4,614	4,428	5,042	4,794
Deaths.....	5,564	5,720	6,098	6,452	6,039	5,565
Death rates.....	22.55	22.88	23.46	22.64	21.19	20.57
Deaths under 1 year of age.....	1,427	1,433	1,571	1,770	1,646	1,257
Deaths under 5 years of age.....	2,067	2,070	2,185	2,361	2,222	1,775
Deaths 50 years of age and over.....	1,472	1,635	1,790	1,926	1,917	1,773
Deaths in institutions.....	947	1,027	1,142	1,265	1,183	1,081
Causes of death:						
Measles.....	10	69	5	10	10	10
Scarlet fever.....	14	14	26	7	14	16
Diphtheria.....	137	164	182	128	172	124
Whooping cough.....	31	30	76	30	74	58
Typhoid fever.....	208	208	183	187	191	187
Malarial fevers.....	103	80	85	50	26	64
Meningitis.....	90	87	88	105	83	88
Diarrheal diseases.....	482	372	476	575	519	300
Croup.....	44	40	39	30	26	17
Acute lung diseases.....	776	842	887	827	681	650
Consumption.....	756	749	714	681	675	671
Bright's disease of the kidneys.....	58	63	69	63	49	58
Heart diseases (excluding aneurisms).....	273	337	345	345	340	368
Violence.....	216	202	222	298	267	248
All other diseases.....	2,366	2,463	2,701	3,116	2,912	2,726

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TABLE XLIV.—*Mean temperature in the District of Columbia.*

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1870											44.6	34.0
1871	32.6	35.9	48.0	58.2	63.9	73.2	74.0	76.8	62.3	58.1	42.3	32.1
1872	31.7	33.7	35.4	56.0	67.4	75.4	81.8	79.0	69.0	65.5	42.5	30.3
1873	30.9	34.8	41.8	53.1	63.6	75.1	79.8	74.8	68.0	54.9	40.8	40.5
1874	40.8	37.2	44.5	47.6	63.8	77.5	78.9	71.6	70.1	55.9	44.6	39.2
1875	29.5	28.8	39.1	48.0	63.6	72.9	77.0	71.9	64.6	53.6	41.0	36.8
1876	40.3	36.7	39.4	51.4	64.5	75.8	81.4	75.5	65.2	50.7	45.2	26.5
1877	29.4	39.4	41.0	52.9	61.9	73.9	77.8	76.3	66.9	58.6	46.2	41.8
1878	33.5	39.8	49.4	58.3	62.5	69.1	80.2	75.0	68.9	57.0	45.4	33.3
1879	30.8	31.6	43.5	51.8	65.3	72.9	78.6	73.9	64.4	62.0	45.6	41.1
1880	41.9	40.8	41.8	55.5	70.5	73.5	76.7	74.9	67.9	54.9	40.2	29.0
1881	27.6	32.3	40.1	50.3	67.0	70.7	77.4	76.5	77.0	62.9	47.5	41.7
1882	33.2	40.4	44.1	50.8	59.2	73.8	76.0	73.8	69.1	60.9	42.9	34.1
1883	29.6	37.5	37.6	50.9	63.6	74.4	76.8	72.1	65.1	56.9	47.2	36.9
1884	29.4	40.9	42.2	50.9	64.4	72.5	74.2	74.2	71.7	59.6	44.7	26.0
1885	32.9	26.9	34.5	53.1	62.3	71.4	77.8	73.4	66.1	54.7	45.3	37.5
1886	28.9	32.2	42.0	55.5	62.1	69.9	73.9	73.1	69.3	57.6	46.1	30.7
1887	32.9	38.9	38.5	51.6	67.9	72.1	80.5	73.2	65.0	55.4	44.9	37.2
1888	29.2	35.7	37.5	52.9	62.7	73.0	72.9	73.9	63.2	50.5	45.8	35.2
1889	36.8	20.4	42.3	53.2	63.8	69.8	74.2	70.6	65.6	52.5	46.2	45.6
1890	44.2	43.4	41.4	53.7	63.8	74.9	75.1	73.5	67.7	56.2	47.8	34.2
1891	37.3	41.5	38.5	55.4	61.3	71.4	72.0	74.5	70.2	54.4	43.9	43.1
1892	31.7	36.9	37.7	51.5	63.8	76.2	75.7	76.2	66.2	55.0	43.6	33.0
1893	24.0	34.9	41.0	54.0	61.6	72.0	77.0	74.7	66.0	56.4	43.6	38.4
1894	37.7	35.2	48.6	53.2	64.8	73.7	78.0	73.9	71.4	57.8	43.8	37.4

TABLE XLV.—*Mean relative humidity in the District of Columbia.*

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual mean.
1874									72.2	68.7	66.1	65.5	66.8
1875	73.6	67.2	69.0	65.1	53.7	64.2	70.3	81.8	70.9	70.1	72.0	79.1	69.7
1876	68.0	69.6	67.2	59.6	64.7	65.3	64.5	73.2	72.8	68.9	74.1	69.5	68.1
1877	74.9	61.9	66.4	63.6	61.7	71.6	71.7	71.3	75.9	74.8	73.2	71.3	69.9
1878	76.8	70.4	63.8	63.0	66.6	66.7	69.5	77.3	77.0	71.6	72.4	71.4	70.5
1879	72.3	67.0	58.6	57.7	61.7	63.9	60.4	71.9	71.3	67.4	64.3	71.9	65.7
1880	74.1	65.3	65.8	55.5	58.5	63.0	65.1	70.8	68.9	67.9	70.5	74.2	66.6
1881	77.6	73.4	67.3	66.0	69.3	72.7	67.8	70.9	74.4	73.4	74.9	76.0	72.0
1882	80.9	72.6	69.3	68.1	70.9	74.9	67.1	75.2	77.2	78.0	71.6	71.3	73.2
1883	81.6	73.5	65.9	74.0	64.9	70.1	68.9	67.9	74.3	77.0	71.0	75.2	72.0
1884	77.9	78.5	72.9	62.1	66.0	71.4	72.3	75.1	69.8	68.3	70.3	79.4	72.0
1885	71.1	72.2	67.0	59.4	68.1	60.0	68.8	73.7	71.2	78.6	76.2	69.1	69.6
1886	81.4	76.2	70.8	75.7	80.4	83.2	74.4	75.0	73.7	70.0	63.3	73.7	74.8
1887	67.9	70.6	59.6	61.7	69.3	68.0	71.9	72.8	72.9	65.9	60.1	69.7	67.5
1888	73.6	75.5	69.4	59.1	74.5	70.0	77.0	79.6	83.8	76.8	75.0	68.5	73.6
1889	74.4	69.2	67.2	69.2	73.2	77.2	80.4	79.0	81.3	76.5	78.2	72.8	75.0
1890	71.7	74.5	62.2	63.6	72.8	68.9	71.2	77.7	81.7	76.4	71.4	70.7	72.3
1891	74.5	74.4	72.8	61.9	68.4	74.0	96.7	81.7	82.8	73.5	72.9	69.7	75.2
1892	73.2	73.7	70.1	64.8	69.2	75.0	76.5	73.5	74.4	68.0	69.3	74.0	71.8
1893	71.0	68.0	65.0	67.0	68.7	72.0	67.0	67.2	76.0	77.0	73.5	71.2	70.4
1894	76.6	73.0	65.6	63.2	69.9	67.6	68.0	75.5	76.9	76.2	68.3	75.4	71.3

TABLE XLVI.—Rainfall in the District of Columbia.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1870											1.57	0.46	
1871	2.20	1.99	5.92	1.54	3.45	4.78	6.10	1.59	2.70	1.50	4.85	1.36	37.98
1872	.23	.93	3.22	1.74	1.43	2.78	.82	5.72	3.92	4.83	2.75	2.49	30.86
1873	3.73	4.69	3.03	3.19	5.21	1.63	4.30	6.83	3.48	5.62	3.02	.97	45.70
1874	1.89	1.84	2.06	5.65	2.82	3.47	2.34	1.71	7.84	.29	2.08	2.59	34.58
1875	1.86	2.65	3.06	2.29	1.01	2.06	3.05	12.93	1.98	1.86	3.95	3.51	41.11
1876	1.68	3.50	5.52	2.43	3.02	4.59	5.12	4.17	10.81	2.99	2.83	1.30	47.96
1877	3.73	1.16	3.58	4.87	2.26	5.92	6.50	2.74	4.93	6.50	7.18	3.22	52.59
1878	4.77	2.54	4.31	3.32	5.27	6.33	8.37	8.89	2.46	5.86	3.03	4.94	60.09
1879	3.13	1.87	1.74	2.39	1.58	3.29	3.36	7.36	1.56	.79	1.10	4.66	32.83
1880	2.51	1.71	5.60	3.81	3.37	3.52	2.25	2.83	3.42	2.31	2.48	4.02	38.83
1881	5.14	4.01	6.61	2.08	1.86	5.71	1.67	1.07	2.19	3.29	2.45	6.12	42.20
1882	7.09	5.09	3.75	2.55	5.00	2.33	4.46	4.44	7.84	.53	1.33	2.38	46.79
1883	3.15	5.08	3.27	4.09	2.50	8.55	4.73	3.30	4.33	2.63	1.19	2.89	45.71
1884	5.59	6.84	7.24	1.86	3.09	6.95	7.39	1.01	.14	1.73	3.42	4.70	49.96
1885	4.46	4.63	1.53	1.71	2.85	3.30	3.03	6.49	2.15	8.69	3.33	2.67	44.84
1886	5.01	4.32	6.41	2.71	10.60	6.75	10.63	2.43	1.79	1.20	2.88	3.44	58.17
1887	2.39	3.42	3.83	3.24	2.50	2.90	3.29	2.34	3.12	1.82	1.83	4.31	35.06
1888	2.99	3.19	4.53	1.89	4.77	3.53	4.47	3.35	6.82	3.27	2.97	3.27	45.00
1889	4.05	2.47	4.20	6.13	10.69	5.01	8.13	3.07	3.88	4.48	6.03	.19	61.33
1890	1.54	4.20	3.65	2.81	4.73	2.02	3.24	5.50	4.22	5.15	.79	3.74	41.59
1891	6.14	4.49	8.84	2.94	3.72	4.61	8.40	4.18	3.12	2.24	1.47	2.80	53.05
1892	5.84	3.64	5.70	4.52	4.07	2.59	5.04	.27	3.55	.34	3.38	2.82	41.76
1893	1.85	4.25	1.83	3.21	5.41	1.81	1.44	2.32	3.91	4.11	4.30	2.27	36.71
1894	2.14	4.64	.98	3.34	4.03	1.24	2.14	2.00	1.53	3.14	1.52	4.15	32.85

TABLE XLVII.—Statement showing the number of cases of diphtheria reported, together with the number of deaths therefrom, with percentages, average age, sex, and color, for the year ended June 30, 1895.

Month.	Cases re- ported.	Deaths.	Cases.		Deaths.		Per- centage of deaths to cases.
			White.	Colored	White.	Colored	
1894.							
July.....	24	15	19	5	10	5	62.5
August.....	64	18	43	21	12	6	28.1
September.....	47	16	23	24	12	4	34.0
October.....	87	23	51	36	15	8	26.4
November.....	45	17	37	8	14	3	37.7
December.....	44	15	36	8	14	1	33.3
1895.							
January.....							
February.....	26	8	20	6	6	2	30.8
March.....	21	8	19	2	5	3	38.1
April.....	15	1	14	1	.....	1	6.6
May.....	22	1	21	1	1	4.3
June.....	15	1	14	1	1	6.6
	8	1	8	1	12.5
Total and mean.....	418	124	305	113	91	33	29.6

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TABLE XLVIII.—Statement showing the number of cases of scarlet fever reported, together with the number of deaths therefrom, with percentages, average age, sex, and color, for the year ended June 30, 1895.

Month.	Cases re- ported.	Deaths.	Aver- age of those at- tacked.	Cases.		Deaths.		Per- centage of death- to cases.
				White.	Colored.	White.	Colored.	
1894.								
July	15			13	2			
August	29			27	2			
September	23			18	5			
October	45	2		39	6	2		4.4
November	49	5		46	3	4		10.2
December	36	1		34	2		1	2.8
1895.								
January	46			39	7			
February	42	2		41	1	2		4.8
March	30			27	3			
April	34	2		29	5	2		6.0
May	39	3		34	5	3		7.7
June	32	1		32		1		3.1
Total and mean	420	16		379	41	14	2	3.8

LAWS AND REGULATIONS RELATING TO THE PUBLIC HEALTH.

ACT OF CONGRESS ESTABLISHING BOARD OF HEALTH.

Section 26 of an act of Congress approved February 21, 1871, entitled "An act to provide a government for the District of Columbia."

[Sec. 72, chap. 1, vol. 2, Revised Statutes.]

* * * * *
SEC. 26. *And be it further enacted*, That there shall be appointed by the President of the United States, by and with the advice and consent of the Senate, a board of health for said District, to consist of five persons, whose duty it shall be to declare what shall be deemed nuisances injurious to health, and to provide for the removal thereof; to make and enforce regulations to prevent domestic animals from running at large in the cities of Washington and Georgetown; to prevent the sale of unwholesome food in said cities; and to perform such other duties as shall be imposed upon said board by the legislative assembly.

* * * * *
Approved February 21, 1871.
—————

Section 8 of an act of Congress approved June 11, 1878, entitled "An act providing a permanent form of government for the District of Columbia."

* * * * *
SEC. 8. That in lieu of the board of health now authorized by law, the Commissioners of the District of Columbia shall appoint a physician as health officer, whose duty it shall be, under the direction of the said Commissioners, to execute and enforce all laws and regulations relating to the public health and vital statistics, and to perform all such duties as may be assigned to him by said Commissioners; and the board of health now existing shall, from the date of the appointment of said health officer, be abolished.

* * * * *
Approved June 11, 1878.
—————

PUBLIC RESOLUTION—No. 20.

JOINT RESOLUTION legalizing the health ordinances and regulations for the District of Columbia.

Resolved by the Senate and House of Representatives of the United States in Congress assembled, That the ordinances of the late board of health of the District of Columbia, as revised, amended, and adopted November nineteenth, eighteen hundred and seventy-five, entitled "An ordinance to revise, consolidate, and amend the ordinances of the board of health, to declare what shall be deemed nuisances injurious to health and to provide for the removal thereof," as printed in the report of said late board of health made to the first session of the Forty-fourth Congress, being Executive Document number one, part eight, be, and the same are hereby, legalized; and the respective penalties therein prescribed for violations thereof may be imposed and enforced for the respective offenses therein described, excepting the sections of said ordinance following, namely: Sections seven, nine, and fourteen, which said sections are not hereby legalized.

SEC. 2. That the ordinances, rules, and regulations of said late board of health contained in the report mentioned in the preceding section, and printed in the said executive document therein mentioned, namely:

First. "An ordinance to amend an ordinance to prevent domestic animals from running at large within the cities of Washington and Georgetown, passed by the board of health May nineteenth, eighteen hundred and seventy-one;"

Second. "An ordinance to prevent the sale of unwholesome food in the cities of Washington and Georgetown;"

Third. "An ordinance to provide for the inspection of streets, food, live stock, fish and other marine products, in the cities of Washington and Georgetown, and to define the duties of inspectors and other officers of the board of health;"

Fourth. "An ordinance to amend section ten of the code so as to read:"

Fifth. "An ordinance to amend an ordinance passed May thirteenth, eighteen hundred and seventy-three, to read as follows:"

Sixth. "An ordinance to prevent committing or creating nuisances in or about public urinals located within the cities of Washington and Georgetown;"

Seventh. "Rules and regulations in regard to smallpox;"

Eighth. "Regulations to secure a full and correct record of vital statistics, including the registration of marriages, births, and deaths, the internment, disinterment, and removal of the dead in the District of Columbia," be, and the same are hereby, legalized and made valid; and the penalties therein provided respectively for violations thereof, may be imposed and enforced for the violations of the same respectively, as provided by section twenty-seven of the ordinances passed November nineteenth, eighteen hundred and seventy-five.

Approved April 24, 1880.

The above has been amended as follows:

That the ordinances of the late board of health of the District of Columbia, as legalized by joint resolution of Congress, approved April twenty-fourth, eighteen hundred and eighty, be, and the same are hereby, declared to have the same force and effect within the District of Columbia as if enacted by Congress in the first instance, and that the powers and duties imposed upon the late board of health, in and by the said ordinances, are hereby conferred upon the health officer of said District, and that all prosecutions for violations of said ordinances and regulations shall be in the police court of the District of Columbia, in the name of the said District: *Provided*, That said regulations shall not be enforced against established industries which are not a nuisance in fact.

Passed August 14, 1894.

ORDINANCES AS REVISED, AMENDED, AND ADOPTED BY THE BOARD OF HEALTH, NOVEMBER 19, 1875.

AN ORDINANCE to revise, consolidate, and amend the ordinances of the board of health, to declare what shall be deemed nuisances injurious to health, and to provide for the removal thereof.

Be it ordained and enacted by the board of health of the District of Columbia, That filth, the contents of cesspools, offal, garbage, foul water, dye water, refuse from manufactories, ordure, urine, stable manure, decayed animal or vegetable matter, or other offensive substance detrimental to health thrown, placed, or allowed to remain in or upon any street, avenue, alley, sidewalk, gutter, public reservation, or open lot, in the cities of Washington and Georgetown, or in the more densely populated suburbs of said cities, are hereby declared nuisances injurious to health; and any person who shall commit, create, or maintain the aforesaid nuisances, or either of them, shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 2. That the carrying and transportation of bones, hides, fish, garbage, offal, or other animal or vegetable substances, in decomposing and offensive condition, in any other than covered and inclosed vehicles, through any street, avenue, alley, or public place, within the cities of Washington and Georgetown, or the more densely populated suburbs of said cities, is hereby declared a nuisance injurious to health; and any person who shall cause, commit, create, or maintain such nuisance shall, upon conviction, be fined not less than two nor more than twenty-five dollars for every such offense.

SEC. 3. That manure accumulated in great quantities; manure, offal, or garbage piled or deposited within 300 feet of any place of worship, or of any dwelling, or unloaded along the line of any railroad, or in any street or public way; cars or flats loaded with manure, or other offensive matter, remaining or standing on any railroad, street, or highway in the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, are hereby declared nuisances injurious to health; and any person who shall pile or deposit manure, offal, or garbage, or any offensive or nauseous substance within 300 feet of any inhabited dwelling within the limits of said cities or their said suburbs; and any person who shall unload, discharge, or put upon or along the line of any railroad, street, or highway, or public

place, within said cities or their said suburbs, any manure, garbage, offal, or other offensive or nauseous substance within 300 feet of any inhabited dwelling, or who shall cause or allow cars or flats loaded with, or having in or upon them any such substance to remain or stand in or along any railroad, street, or highway within the limits of said cities or their suburbs, within 300 feet of any inhabited dwelling, and who shall fail, after notice duly served by this board, to remove the same shall, upon conviction thereof, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 4. The filling, leveling, or raising the surface of any ground or lot within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, with animal or vegetable substances, filth gathered in cleaning yards or streets, or waste material from mills or factories, or the removal of the surface of any ground or lot within said cities or their said suburbs, filled with such offensive matter or substance, in such manner as to cause noisome odors or noxious gases to arise, are hereby declared nuisances injurious to health; and any person who shall cause, commit, create, or maintain such nuisance shall, upon conviction, be fined not less than five nor more than twenty dollars for every such offense.

SEC. 5. That throwing or placing any defiling or poisonous substance, decayed animal or vegetable matter or filth into, or causing or allowing the same to pass or enter into any spring, well, or river water used by the public for drinking or cooking purposes, or into the water of any public reservoir or water pipe within the District of Columbia, whereby such water is rendered impure and unwholesome, are hereby declared nuisances injurious to health; and any person who shall commit or create such nuisance shall, upon conviction, be fined not less than five nor more than fifty dollars for every such offense.

SEC. 6. That any wells, springs, or water used for drinking or cooking purposes which are impure and unwholesome, or which have been rendered impure and unwholesome by reason of any defiling or poisonous substance, are hereby declared nuisances and injurious to health; and any person who shall maintain or continue such nuisance, after due notice from this board to abate the same, shall, upon conviction, be fined not less than ten nor more than fifty dollars for every such offense.

SEC. 10. That drainpipes, soil pipes, passages into sewers, or connections between any sewer and any ground or building, not of adequate and sufficient size to allow the free and entire passage of all the material that enters the same, or not provided with good and sufficient sewer traps, so as to prevent the escape of noisome gases therefrom, are hereby declared nuisances injurious to health; and any person creating or maintaining either of said nuisances, who shall fail, after due notice from this board, to abate the same, shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 11. That all water-closets and privies connected with any house, building, or premises within the District of Columbia, in or upon which people live, or where they congregate or assemble, or any kind of business is done, kept in a filthy and offensive condition, or from which noisome odors and noxious gases arise, and all water-closets located within and being a part of any such house or building not provided with proper sewer traps so as to prevent the return and escape of noxious gases and offensive odors from any public or private sewer connected therewith, are hereby declared nuisances injurious to health; and any person creating, keeping, or maintaining such nuisance shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 12. That any privy within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, including Uniontown or Anacostia, and Mount Pleasant, in the District of Columbia, constructed of other material than brick, cement, or wood, or which is not provided with a sufficient box, bucket, or vessel for the reception of filth, and the inside of which is not at least five feet distant from the line of any adjoining lot, and at least two (2) feet distant from any street, lane, alley, camp, square, or public place, or public or private passageway; and any privy so constructed that it can not be conveniently approached and cleaned, or in such manner that each and every vault, box, bucket, or vessel thereof is not made tight and close, so that the contents thereof can not escape therefrom, except as may be permitted by means of a passageway or conduit under ground for the purpose of carrying away the contents of such vault, box, or vessel into any common sewer or drain, is hereby declared a nuisance injurious to health; and any person who shall create, maintain, or continue such nuisance, and shall fail, after due notice from this board, to abate or remedy the same, shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 13. That fecal matter, not thoroughly deodorized and disinfected, remaining in privies in the District of Columbia is hereby declared a nuisance injurious to health; and the Board of Health shall, upon the receipt of complaint, in writing, cause any privy to be inspected, and, if necessary, cleaned by the person authorized for said purpose; and any person owning or occupying premises on which any privy

is situated who shall refuse to permit the same to be inspected and cleaned at the times designated by said board, or whenever necessary, shall, upon conviction, be fined not less than five dollars for every such offense.

SEC. 15. That it shall be unlawful for any person to deposit the contents of any privy in any place other than such as may be approved by this board; and any person so offending shall, upon conviction, be fined not less than five nor more than fifty dollars for every such offense.

SEC. 16. That the system heretofore in use of removing night-soil, cleaning privies, privy boxes, vaults, sinks, and cesspools within the cities of Washington and Georgetown, and the more densely populated suburbs of the said cities, by buckets or other process, agitating and exposing the contents thereof in the open air, and of transporting said contents in carts and other vehicles not air-tight through the streets, avenues, alleys, and other public places within said cities, and their said suburbs, is hereby declared a nuisance injurious to health; and that from and after the 15th day of October, A. D. 1873, no part of the contents (except substances not soluble in water) of any privy, privy box, vault, sink, or cesspool within said cities or their said suburbs shall be removed therefrom, nor shall the same be transported through any of the streets, avenues, alleys, or other public places of said cities, or of their said suburbs, except as the same shall be removed and transported by means of some air-tight apparatus, pneumatic or other process, so as to prevent the said contents from being agitated or exposed in the open air during said process of removal or transportation; and any person violating the provisions of this section shall, upon conviction thereof, be fined not less than ten nor more than fifty dollars for every such offense.

SEC. 17. That the keeping, herding, and feeding of hogs, in pens or otherwise, within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, is hereby declared a nuisance injurious to health; and any person creating or maintaining such nuisance, who shall fail, after due notice from this board, to abate the same, shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 18. That filthy and unwholesome stables, sheds, pens, or places where cows, horses, mules, or other animals are kept, within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, are hereby declared nuisances injurious to health; and any person creating or maintaining such nuisance, who shall fail, after due notice from this board, to abate the same, shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 19. That any animal affected by glanders or other contagious or pestilential disease kept or remaining in any stable, shed, pen, or place within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, is hereby declared a nuisance injurious to health; and any person keeping or maintaining such nuisance who shall fail, after due notice from this board, to abate the same shall, upon conviction, be fined not less than five nor more than twenty-five dollars for every such offense.

SEC. 20. That all establishments or places of business for tanning, skinning, scouring, or dressing hides or leather, within the District of Columbia, in a filthy condition, or from which noisome odors and noxious gases arise, are hereby declared nuisances injurious to health; and any person who shall erect, create, maintain, or continue such nuisance, and who shall fail, after due notice from this board, to abate the same shall, upon conviction, be fined not less than ten nor more than fifty dollars for every such offense.

SEC. 21. That the boiling of offal, swell, bones, fat, tallow, or lard; the crushing, grinding, or burning of bones or shells; cleansing of guts; making glue from any dead animal or part thereof; making or boiling varnish or oil; making lampblack, turpentine, or tar; distilling ardent, alcoholic, or fermented spirits; storing or keeping scraps, fat, grease, or other offensive animal matter; rendering or trying out dead, undressed, and unslaughtered animals, or any other business or trade whereby noisome stenches and odors and noxious gases arise or are generated, within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, are hereby declared nuisances injurious to health; and any person who shall cause, erect, create, maintain, or continue any such nuisance, and who shall fail, after due notice from this board, to abate the same, shall, upon conviction thereof, be fined not less than ten nor more than one hundred dollars for every such offense.

SEC. 22. That unclean and filthy slaughterhouses, rooms, buildings, or places where sheep, hogs, cattle, or other animals are slaughtered, within the District of Columbia, are hereby declared nuisances injurious to health; and any person creating, keeping, or maintaining such nuisance who shall fail, after due notice from this board, to abate the same shall, upon conviction, be fined not less than ten nor more than fifty dollars for every such offense.

SEC. 23. That the crushing or breaking of stone within the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, by machines or otherwise, in such manner as to create offensive and deleterious dust, is hereby declared a nuisance injurious to health; and any person creating or maintaining said nuisance who shall fail, after due notice from this board, to remove or abate the same shall, upon conviction, be fined not less than ten nor more than fifty dollars for every such offense.

SEC. 24. That undressed dead animals being or lying in any part of the cities of Washington or Georgetown, or the more densely populated suburbs of said cities, viz: Any of the horse, mule, or jack kinds, or any cow, goat, calf, sheep, dog, or swine, are hereby declared nuisances injurious to health; and any person owning, possessing, or controlling any such dead animal, or any person who shall knowingly place or allow such dead animal to remain in any part of said cities or their said suburbs, and who shall fail to give notice thereof to the board of health within eight hours after the death of said animal, shall, upon conviction, be fined not less than five nor more than ten dollars for every such offense.

SEC. 25. That unmuzzled dogs going upon any street, avenue, or other public place, between the fifteenth day of May and the fifteenth day of October in any year, mad dogs, and dogs bitten by hydrophobic dogs are hereby declared nuisances injurious to health; and any person owning or keeping any dog who shall allow the same to go unmuzzled upon any street, alley, or other public place, between the fifteenth day of May and the fifteenth day of October in any year, or who shall refuse to kill, or to cause to be killed, any such dog owned or kept by him which has gone mad, or given symptoms of hydrophobia, or who shall omit to confine any such animal exposed to such disease, or which has been bitten by a hydrophobic dog or animal, shall be deemed guilty of keeping and maintaining a nuisance, and, upon conviction thereof, shall be fined not less than one nor more than twenty-five dollars; and any dog going at large between the fifteenth day of May and the fifteenth day of October in any year, without a proper muzzle, shall be taken up by the poundmaster, who shall charge the owner of the same one dollar for its redemption; and every such dog not redeemed within twenty-four hours after having been taken up as aforesaid shall be liable to be shot by said poundmaster.

SEC. 26. That it shall be the duty of the health officer appointed by this board, upon receiving information or obtaining knowledge of the existence of any thing or things herein declared to be nuisances, or any thing or things which may hereafter be declared to be nuisances by any ordinance or resolution enacted or adopted by this board, to notify the person or persons committing, creating, keeping, or maintaining the same to remove, or cause to be removed, the same within twenty-four hours, or such other reasonable time as may be determined by this board, after such notice be duly given; and if the same be not removed by such person or persons within the time prescribed in said notice, it shall be the duty of the health officer aforesaid to remove, or cause to be removed, such nuisance or nuisances, and all costs and expenses of such removal shall be paid by the persons committing, creating, keeping, or maintaining such nuisance or nuisances; and if the said costs and expenses thus accruing shall not be paid within ten days after such removal by said health officer, the same shall be collected from the person or persons committing, creating, keeping, or maintaining such nuisances by suit at law.

SEC. 27. That all fines and penalties imposed by any section of this ordinance shall be collected by prosecution in the police or other proper court of the District of Columbia, by information filed in said court, at the instance of the board of health; and whenever the nuisance complained of is set forth as continuing and existing, and is shown to be such to the satisfaction of the court before whom the person creating or maintaining said nuisance is tried, the party so offending shall, upon conviction thereof, in addition to the fine imposed, be ordered by said court to abate or remove said nuisance.

SEC. 28. That all ordinances, or parts of ordinances, of this board inconsistent or in conflict with the foregoing provisions of this ordinance are hereby repealed.

Passed November 19, 1875.

AN ORDINANCE to amend "An ordinance to prevent domestic animals from running at large within the cities of Washington and Georgetown," passed by the board of health May 19, 1871.

Be it ordained and enacted by the board of health of the District of Columbia, That domestic animals shall not be permitted to run at large within the limits of the cities of Washington and Georgetown, and all domestic animals found running at large within the limits of said cities shall be taken up and impounded.

SEC. 2. That every animal taken up and impounded as aforesaid, within forty-eight hours after such impounding, if not claimed, and the charges for taking up, impound-

ing, and keeping the same paid, shall be sold at public auction; and the poundmaster appointed by this board, as hereinafter provided, is hereby authorized to act as auctioneer at said sale.

SEC. 3. That the proceeds of such sale shall be paid over to the treasurer of the board, who shall give duplicate receipts therefor, one copy of the same to be retained by the officer selling such animals, and the other copy to be by said officer filed with the secretary of the board; and it shall be the duty of said treasurer to keep an accurate account of all moneys received by him under the provisions of this ordinance, and to report the same from time to time as required by the board.

SEC. 4. That all moneys received by said treasurer from the sale of animals, as aforesaid, shall, if demanded by the owner of such animal, at any time within one year from the sale thereof, upon satisfactory proof that such claimant was the owner of such animal sold as aforesaid, after deduction of charges and expenses, as herein-after specified, of taking up, impounding, and keeping such animals, be paid to such claimant; otherwise said moneys shall be used by this board for sanitary purposes within and for the benefit of the District of Columbia.

SEC. 5. That the charges for taking up and impounding domestic animals found running at large within the cities of Washington and Georgetown shall be as follows, to wit: For each horse, mule, bull, steer, cow, calf, heifer, two dollars; and for each sheep, goat, hog, one dollar; and for each goose, fifty cents; and, in addition to said several sums, the charges for keeping said animals shall be the reasonable and necessary expenses thereof, to be paid by the owner.

SEC. 6. That no person shall break open, or in any manner, directly or indirectly, aid or assist in breaking open, any pound established by the board of health, or take or let any animal out of such pound, without the consent of the officer keeping the same; nor shall any person or persons hinder, delay, or obstruct any person or persons engaged in driving or carrying to such pound any animal or animals liable to be taken up or impounded under the provisions of this ordinance; and any person violating the provisions of this section shall be punished, upon conviction thereof, by a fine of not less than five dollars nor more than twenty-five dollars for each and every violation.

SEC. 7. That there shall be appointed by the board of health a poundmaster, whose duty it shall be to take up and impound all domestic animals found running at large within the cities of Washington and Georgetown, to keep safely and carefully all property pertaining to said pound, and all animals impounded therein; and to report from time to time, through the health officer, as required by this board, the condition of said pound, and what repairs, if any, are needed; and the number and description of the animals therein impounded, and what disposition has been made of the same; and to report all moneys received by him under the provisions of this ordinance. And it shall be the further duty of said poundmaster to pay over, daily, all moneys received as aforesaid to the health officer, taking receipt therefor, and said poundmaster shall give good and sufficient bonds for the proper discharge of his several duties as herein provided.

SEC. 8. That the poundmaster appointed by this board shall keep a register of all animals taken up by him, with an accurate description of the same, which shall at all times be open to the inspection of the public; and the said poundmaster is hereby forbidden to deliver any animal taken up and impounded to any person applying for the same unless such person shall present good and sufficient evidence of his ownership or right to the possession of said animal; and no sale of any animal or animals impounded as aforesaid shall be made until due public notice by advertisement in at least one newspaper of such sale shall have been given, together with a description of the animal or animals to be sold, as hereinbefore provided.

SEC. 9. That any ordinance or part of an ordinance heretofore passed by the board of health of the District of Columbia inconsistent with the foregoing be, and the same is hereby, repealed.

AN ACT authorizing the Commissioners of the District of Columbia to extend the area for the taking up and impounding of domestic animals in the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commissioners of the District of Columbia be, and are hereby, authorized to prescribe rules for taking up and impounding of domestic animals found running at large in the District of Columbia.

Approved June 27, 1879.

AN ORDINANCE to prevent the sale of unwholesome food in the cities of Washington and Georgetown.

Be it ordained and enacted by the board of health of the District of Columbia, That no person shall knowingly sell, or cause to be sold, within the cities of Washington or Georgetown, any impure, diseased, decayed, or unwholesome provisions, nor shall any person fraudulently adulterate, for the purpose of sale within said cities, any bread or other material intended to be used for food with any substance of a poisonous character, or any substance injurious to health; and any person violating the provisions of this section shall, upon conviction thereof, be punished by a fine of not less than ten nor more than fifty dollars for each and every such offense.

SEC. 2. That no person shall offer for sale within the cities of Washington or Georgetown any liquor used for drink, whether malt, vinous, or ardent, or the milk of cows or goats, intended to be used for food or drink, which has been adulterated with any poisonous or deleterious ingredient; and any person violating the provisions of this section shall, upon conviction, be punished by a fine of not less than ten nor more than fifty dollars for each and every such offense.

SEC. 3. That no person shall convey into the cities of Washington and Georgetown, and offer for sale in any part of said cities, any animal or part of animal that may be sickly, diseased, or unwholesome, or which may have died from disease or accident, or any fish, or vegetables not fresh, sound, and fit for food; and any person violating the provisions of this section shall, upon conviction thereof, be punished by a fine of not less than five nor more than twenty-five dollars for each and every such offense.

SEC. 4. That no person shall slaughter any cattle for the purpose of sale as food within the cities of Washington and Georgetown when such cattle are in a feverish or diseased condition; and any person violating the provisions of this section shall, upon conviction thereof, be punished by a fine of not less than five nor more than twenty-five dollars for each and every such offense.

SEC. 5. That no person, whether owner, manager, keeper of, agent, bartender, or clerk in any saloon, restaurant, boarding house or eating house, located within the cities of Washington or Georgetown, shall offer for sale as food or drink anything poisonous or unwholesome; and any person violating the provisions of this section shall, upon conviction thereof, be punished by a fine of not less than five nor more than twenty-five dollars for each and every such offense.

SEC. 6. That no person owning, renting, leasing, or occupying any stall, room, or stand where meats or vegetables are sold for food, within the cities of Washington or Georgetown, shall fail to keep said stall, room, or stand in a cleanly condition; nor shall such person allow said meats or vegetables to become poisoned, or infected, or unfit for food by reason of uncleanly condition of such stall, room, or stand; and any person violating the provisions of this section shall, upon conviction, be punished by a fine of not less than ten nor more than twenty-five dollars for each and every such offense.

SEC. 7. That no person shall offer for sale, within the cities of Washington or Georgetown, any unwholesome, watered, or adulterated milk, or swill milk, or milk from cows kept up and fed on garbage, swill, or other deleterious substance, nor shall any person offer for sale within said cities any butter or cheese made from such unwholesome milk; and any person violating the provisions of this section shall, upon conviction, be punished by a fine of not less than five nor more than twenty-five dollars for each and every such offense.

SEC. 8. That on and after the passage of this ordinance it shall be unlawful for any person or persons to sell or expose for sale, within the cities of Washington or Georgetown, any unsound, blown, or unwholesome meat or other article of food, under penalty of not less than five nor more than twenty-five dollars for each and every such offense.

AN ORDINANCE to provide for the inspection of streets, food, live stock, fish and other marine products in the cities of Washington and Georgetown, and to define the duties of inspectors and other officers of the board of health.

Be it ordained and enacted by the board of health of the District of Columbia, That there shall be appointed by the board of health a health officer and such inspectors as may be required, who shall be assigned to the several duties of inspection of streets, of food, of live stock, of fish and other marine products, or detailed for the performance of such other duties as may be necessary.

SEC. 2. That it shall be the duty of the health officer, as he may be directed by this board, to execute, or cause to be executed, the ordinances, resolutions, and orders of the board, and generally, according to its instructions, to exercise a practical supervision in respect to inspectors, poundmaster, and the clerical force in his office; and said health officer shall devote his services to the aforesaid purposes as the board may direct.

SEC. 3. That it shall be the duty of each inspector of streets to visit every part of his district daily, and carefully inspect all streets, alleys, yards, and inclosures, horse and cow stables, privies, slaughterhouses, wharves, and other places where offensive or deleterious matter may exist, and to report promptly to the health officer any and all nuisances injurious to health; and the inspectors of streets shall perform such other duties and special inspections as may be directed by the health officer.

SEC. 4. That it shall be the duty of each inspector of food to attend to the market or markets within his inspection district every morning, at the time when sales commence, and carefully inspect all meats, fowl, game, and vegetables offered for sale, and condemn, seize, and cause to be removed such as may be diseased, or from any other cause rendered unfit for food. He shall also visit, as early as practicable each day, every green grocery or other place within the district where articles of food are kept for sale, and perform his duty of inspection, condemnation, seizure, and removal as hereinbefore prescribed. He shall report his official proceedings daily to the health officer, and in the performance of his duties shall be under the direction of said officer; and the inspectors of food shall perform such other duties and special inspections as may be directed by the health officer.

SEC. 5. That it shall be the duty of the inspector of live stock to carefully inspect all cattle, hogs, sheep, or other animals intended to be killed and sold for consumption as food in the cities of Washington and Georgetown, and to condemn all such as may be diseased, or from any other cause rendered unfit for food; and it is hereby made the duty of said inspector to brand with the letter "C" all cattle, hogs, sheep, or other animals condemned as aforesaid, and said inspector shall report his official proceedings daily to the health officer.

SEC. 6. That it shall be the duty of the inspector of fish and other marine products to examine and inspect all fish, oysters, clams, lobsters, crabs and other marine products, landing by boat, arriving by rail, or otherwise brought by any person or persons into the cities of Washington or Georgetown; and if, upon such inspection, said inspector shall find any of the said marine products to be in an unsound, diseased, or unwholesome condition, it shall be his duty to prohibit their sale; and the said inspector of fish is hereby authorized, empowered, and directed to condemn, seize, and remove any unsound, diseased, or unwholesome fish, oysters, clams, lobsters, crabs or other marine products which may be offered for sale as food within the cities of Washington and Georgetown.

SEC. 7. That in the performance of the duties herein prescribed the inspector of fish shall be, and is hereby, authorized and empowered to board all boats, vessels, steamboats, and cars, and to stop all vehicles, believed by him to contain fish or other marine products, for the purpose of enforcing the provisions of this ordinance, and said inspector shall report his official proceedings daily to the health officer.

SEC. 8. That upon any cattle, meat, birds, fowls, fish, or other marine products, vegetables or other articles of food being found by any inspector or other officer of the board of health in a condition which is, in his judgment, unwholesome and unfit for use as human food, or in a condition or of a quality forbidden by the ordinances of this board, but with respect to the quality and condition of which articles of food said inspector or other officer may be in doubt, he shall forbid the sale thereof and order that the same be set aside, and shall at once notify the health officer of such action; and if, upon inspection, the health officer shall concur in the judgment of the inspector or other officer aforesaid, said health officer shall prohibit the sale and order the removal of said articles, according to the regulations of the board of health; and if the health officer shall not concur in the judgment of the inspector or other officer aforesaid, the sale of said articles shall be allowed. But if, upon inspection, the health officer is in doubt as to whether said articles should be condemned or not, then the committee on food inspections of the board of health shall decide whether or not said articles shall be condemned and the sale thereof forbidden: *Provided*, That no article of food, in a decayed or offensive condition, shall be allowed to remain where found, but the same shall be caused to be removed forthwith by the inspector or officer aforesaid, according to the rules and regulations of the board of health.

SEC. 9. That any person who shall molest, hinder, or in any manner prevent said health officer, or any inspector appointed by this board, from performing any duty imposed upon him or them by the provisions of this ordinance, shall be punished by fine of not less than twenty nor more than one hundred dollars for each and every such offense.

AN ORDINANCE to amend section 10 of the code so as to read:

SEC. 10. *And be it further ordained and enacted*, That drainpipes, soilpipes, or passages into sewers, which are of inadequate and insufficient size or which are not provided with proper sewer traps, within the District of Columbia, are hereby

declared nuisances, injurious to health; and any person or persons, whether owner or tenant (board, department, or corporation officer), using or possessing any drainpipe, soilpipe, passage or connection between any sewer and any ground, building, or place of business, who shall fail to make such drainpipe, soilpipe, passage or connection of adequate or sufficient size to allow the free and entire passage of all that enters or should enter the same, and *provide them with proper sewer traps*; and who shall fail, after notice duly served upon him, to supply such pipes of adequate and sufficient size, and *provided with proper sewer traps*, shall be deemed guilty of keeping and maintaining a nuisance, and, upon conviction thereof, shall be punished by a fine of not less than five dollars nor more than ten dollars.

Passed July 30, 1875.

AN ORDINANCE to amend ordinance passed May 13, 1873, to read as follows:

SEC. 1. That all water-closets and privies connected with any house, building, or premises within the District of Columbia, in and upon which people live or where they do congregate or assemble or any kind of business is done, kept in an uncleanly and foul condition, and from which offensive smells and noxious gases arise, and all water-closets located within and being a part of any such house or building not provided with proper sewer traps, so as to prevent the return and escape of noxious gases and offensive odors from any public or private sewer connected therewith, are hereby declared to be nuisances injurious to health; and any person creating, keeping, and maintaining such nuisance, after due notice served upon him by this board to abate the same within twenty-four hours or within such reasonable time as may be determined by this board, shall, upon conviction thereof, be punished by a fine of not less than five dollars nor more than twenty-five dollars for each and every day such nuisance is allowed to remain unabated.

Passed July 30, 1875.

AN ORDINANCE to prevent committing or creating nuisances in or about public urinal, or urinals located within the cities of Washington and Georgetown.

Be it ordained and enacted by the board of health of the District of Columbia, That fecal matter deposited in or about any public urinal or urinals, located within the cities of Washington or Georgetown, defecating in or about said urinal or urinals, or obstructing the same in any manner or by any means whatever, are hereby declared to be nuisances, injurious to health; and any person convicted of committing or creating either of said nuisances shall be fined not less than ten dollars nor more than fifty dollars for every such offense.

Passed December 28, 1876.

RULES AND REGULATIONS IN REGARD TO SMALLPOX.

THE DISEASE.

The essential nature of smallpox is to diffuse itself, and, under certain favorable conditions, it is not only communicable from person to person but capable of being transported to great distances.

To prevent the propagation of the specific poison, the following sanitary regulations have been adopted by the board of health, and approved by the governor of the District of Columbia.

VACCINATION.

Parents and guardians shall cause their children and wards to be vaccinated before they attain the age of two years, and revaccinated whenever the board of health shall, after five years from the last vaccination, require it.

The board of health hereby orders and requires the vaccination of all the inhabitants in the District of Columbia, and, whenever in their opinion the public health demands it, the revaccination of all persons who do not furnish satisfactory evidence that they have been successfully vaccinated or revaccinated within five years.

The board of health will furnish the means of vaccination to such persons as are unable to pay for the same. For this purpose the physicians to the poor, or their assistants, will be directed to vaccinate the poor gratuitously; and, whenever the exigency requires it, physicians will be employed to go from house to house for the purpose of vaccinating all persons who need vaccinating.

Principals of incorporated manufacturing companies, superintendents of almshouses, reform and industrial schools, lunatic hospitals, and of all other charities where the poor and sick are received; masters of houses of correction, jailers, keepers of prisons, and directors, or officers of all institutions supported or aided by the District of Columbia shall, at the expense of their respective corporations or institutions, cause all inmates thereof to be vaccinated immediately upon their admission thereto, unless they produce sufficient evidence of previous successful vaccination having taken place within five years.

ISOLATION.

Smallpox being eminently contagious and infectious, isolation forms an imperative necessity for the prevention of its propagation. Whenever, therefore, a case of smallpox occurs in a dwelling containing more than two inhabitants, it shall be the duty of the head of the family to select the most remote apartment for the occupancy of the person afflicted with smallpox, the highest room in the dwelling to be preferred.

And whenever, in a tenement house and lodging house, boarding house, or hotel, the person afflicted by the smallpox can not be isolated to the satisfaction of the health officer, said person shall be removed to the smallpox hospital by agents employed for the purpose by the board of health.

WARNING SIGNS.

Whenever a case of smallpox breaks out in any dwelling or place, the warning flag (made of yellow flannel) shall be attached to and exposed from the premises occupied by said case, as a warning to the passer-by of the presence of smallpox in that locality; and if the yellow flag be not immediately attainable, a placard, on which is written in large and legible letters, "Smallpox here," shall be fastened upon an exposed part of the infected house or dwelling.

DISINFECTION.

It shall be the duty of those in whose dwellings smallpox occurs to fumigate the house and the room of the patient with fumes of burning sulphur three times a day; to cleanse and disinfect every part of the dwelling by the free use of chlorinated soda, carbolic acid, bromo chloralum, or such other disinfectant as the board of health may direct.

A cloth of the size of a square yard, steeped in a solution of chlorinated soda, carbolic acid, or bromo chloralum, shall be hung in the patient's room and kept constantly saturated with the said disinfectants.

CARE OF THE SICK ROOM.

The room of the patient shall be kept thoroughly ventilated, and no other person than a nurse who has had the smallpox, or a member of the family, shall be allowed to enter the same. Persons being in attendance upon the sick shall not come in contact with other inmates or persons, unless they have been previously properly fumigated and disinfected, and have changed the clothing worn by them while in the sick room.

It shall be the duty of said attendants to see that no clothing is conveyed from the sick room that has not been previously disinfected and fumigated. And, moreover, all clothing in said room or worn by the patient while affected by smallpox shall be kept distinct and separate, and shall be given out to be washed only to persons who have had the smallpox, the fact to be stated in every instance that they are from a smallpox patient and must therefore be kept and washed separately.

NOTICE TO THE BOARD OF HEALTH.

It is the duty of every good citizen immediately to notify the board of health of every case of smallpox coming to his knowledge. But it is especially enjoined by law upon proprietors of tenement houses, lodging houses, boarding houses, and hotels to notify the board of health of the presence of smallpox in their respective abodes, under penalty of fine and imprisonment, and this law against all persons concerned will be strictly enforced.

INTERMENTS.

It shall be the duty of the citizen to immediately notify the board of health of the death of any person from smallpox of which he may have knowledge, and no one except such as may have had the smallpox, and the officers of the board of health assigned to that duty, shall take charge of, dress, or bury the body of the person who has thus died.

The interment of persons dying from smallpox shall take place within six hours after death, or as soon as the circumstances of the case will allow; and no person who has died of smallpox shall be buried in private or public cemeteries or burying grounds without a permit from the board of health, a member of the same, or the health officer.

Whenever funeral obsequies may be desired, the body shall be placed in a hermetically-sealed metal coffin, and no person will be allowed to be present at said obsequies or follow the corpse to the grave except the nearest kin relations; and under no circumstances shall a corpse infected with smallpox be taken to a church or meeting house, but it shall be conveyed directly from the house to the grave.

When people are so poor as to be unable to incur the expense of coffin and burial, any undertaker appointed to furnish coffins to the poor shall provide the coffin, and in every case shall take the same to the house in which the corpse lies, but shall not place said corpse in the coffin or take any part in laying out the dead unless he has had the smallpox, and properly fumigated and disinfected his clothing. The laying out of the body and the burial shall be done by the officers appointed for that purpose by the board of health.

SMALLPOX AMBULANCE, INSPECTORS HAVING CONTROL OF THE SAME, AND DRIVER THEREOF.

The smallpox ambulances shall be kept at the smallpox hospital.

The ambulance shall be accompanied by an inspector whenever needed for the removal of smallpox patients or otherwise.

The inspector accompanying the ambulance and the driver are forbidden from entering street cars or any public conveyance.

They shall also keep a suit of clothing to wear during the service of removing smallpox patients, said suit of clothing to be kept fumigated and disinfected at all times, and under no circumstances shall they wear the said clothing when off duty.

The inspector attending to smallpox patients and the driver of the ambulance shall, until otherwise ordered, wear a linen suit while on duty.

The inspector detailed to attend to the removal of smallpox patients shall fumigate and disinfect the dwellings where smallpox cases occur. He shall see that the clothing is properly disinfected, packed up, carried safely to the ambulance, and destroyed. He shall keep an account of the clothes and furniture of poor persons which have been destroyed, the probable value of the same, and the names of the parties to whom they belong, and give a receipt for the same.

Under no circumstances shall the ambulance be allowed to tarry in the streets, except for such length of time as will be required to remove the patient or the body.

The ambulance shall not be taken to any place for repairs; but, if repair is needed, a person having had the smallpox shall be engaged to mend it at its regular depository.

In driving the ambulance to any point care shall be taken to avoid crowded streets, schoolhouses, or frequented places. The driver shall, as far as practicable, keep out of crowded thoroughfares, and shall avoid meeting or passing any procession, funeral, or large concourse of people.

The inspector shall display the yellow flag from every dwelling containing smallpox; and if said flag be taken away without authority the health officer must be immediately notified of the fact.

The inspector of each district shall be notified of the presence and locality of smallpox cases in his district; and it shall be his duty to see that the quarantine regulations relating to houses having the smallpox within are properly enforced, and that no person exposed to the contagion be allowed to go out of the dwelling or come in contact with any other person.

The inspector shall, in an urbane manner, inform the people of the quarantine regulations imposed by the board of health regarding smallpox, but shall cause no unnecessary hardship.

The inspector detailed to attend to the smallpox shall first ascertain whether the case can be isolated in the dwelling, so as not to expose the other inmates to the disease.

Whenever a patient in a tenement, lodging house, boarding house, or hotel is so situated that he can not be isolated from other inmates, he or she shall be removed or taken to the hospital; and if any person interferes with the execution of this

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order, or the patient refuses to obey, the law shall be enforced against such person or persons.

If it come to the knowledge of any inspector that cases of smallpox are kept in tenement houses, lodging houses, boarding houses, or hotels, without the proper notice having been given to the board of health as required by law, the inspector shall make immediate report to the health officer, stating the name of the person or persons causing or abetting in the violation of this law.

In all cases where there is doubt whether a person is really afflicted with smallpox a physician's opinion should be secured before removing the patient.

The inspector shall see that the rules regarding the interment of persons who die of smallpox be complied with.

The foregoing rules and regulations are made and promulgated by the board of health of the District of Columbia, in accordance with an act entitled "An act for the prevention of diseases in the District of Columbia," passed by the legislative assembly of said District, and approved by the governor thereof, June 19, 1872.

CHRIS. C. COX, M. D., LL. D.,
President Board of Health.

Attest:

D. W. BLISS, M. D.,
Secretary.

Approved:

H. D. COOKE,
Governor.

DISTRICT OF COLUMBIA, BOARD OF HEALTH,
Washington, D. C., December 26, 1872.

It is hereby ordered and resolved by the board of health of the District of Columbia, That the "rules and regulations in regard to smallpox," heretofore made and promulgated by the board of health aforesaid, and approved by the governor of said District, be amended as follows, to wit:

PHYSICIANS ATTENDING UPON SMALLPOX PATIENTS.

It shall be the duty of every physician resident of the District of Columbia, or otherwise, attending upon any person affected by smallpox within said District, to report to the board of health said case of smallpox within twelve hours after his first visit and discovery of the disease of said person, the name and residence of said person, and whether the room or residence in which said person may be situated and attended has been and is fumigated and disinfected according to the "rules and regulations" aforesaid.

CHRIS. C. COX, M. D.,
President Board of Health.

Attest:

D. W. BLISS, M. D.,
Secretary.

Approved:

H. D. COOKE,
Governor.

REGULATIONS TO PREVENT THE SPREAD OF SMALLPOX.

Resolved, That all school trustees, school teachers, or others having authority, are forbidden to receive into or allow to attend any school, public or private, within the District of Columbia, any pupil not vaccinated, as required by the "rules and regulations" heretofore made and promulgated by this board.

Passed February 14, 1873.

Approved by the governor, February 14, 1873.

ACT AND REGULATIONS WITH REGARD TO VITAL STATISTICS.

AN ACT to further define and enlarge the powers and duties of the board of health of the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be the duty of the board of health of the District of Columbia to make and enforce regulations to secure a full and correct record of vital statistics, including the registration of deaths and the interment of the dead in said District.

Approved June 23, 1874.

In accordance with the foregoing act of Congress, and in pursuance of authority thereby conferred, the following regulations are made and promulgated for the information and guidance of all concerned:

Regulations to secure a full and correct record of vital statistics, including the registration of marriages, births, and deaths, the interment, disinterment, and the removal of the dead in the District of Columbia.

It is hereby ordered by the board of health of the District of Columbia that there shall be elected or appointed from its members, as the board may direct, an officer named and known as the registrar of vital statistics of the District of Columbia, but who may be designated registrar, and who shall, under the direction of said board, keep a full and correct record of vital statistics, issue such permits as are hereinafter required, make and publish a weekly statement of births, marriages, and deaths in said District, and perform such other duties as are hereinafter provided.

Second. That it shall be the duty of every clergyman, magistrate, or other person who shall perform any marriage ceremony within the District of Columbia, to report each marriage ceremony solemnized by him to the registrar aforesaid, within forty-eight hours thereafter, giving the full name, age, color, occupation, birthplace (State or county), and legal residence of each person married, and the date of such marriage.

Third. That any physician, accoucheur, midwife, or other person in charge who shall attend, assist, or advise at the birth of any child within the District of Columbia, shall report to the registrar aforesaid, within six days thereafter, stating distinctly the date of birth, sex, and color of the child or children born, its or their physical condition, whether stillborn or not, the full name, nativity, and residence of the parents, and the maiden name of the mother of such child or children.

Fourth. That whenever any person shall die within the District of Columbia it shall be the duty of the physician attending such person during his or her last sickness, or the coroner of the District when the case comes under his official notice, to furnish and deliver to the undertaker, or other person superintending the burial of said deceased person, a certificate, duly signed, setting forth, as far as the same may be ascertained, the name, age, color, sex, nativity (giving State or country), occupation, whether married or single, duration of residence in the District of Columbia, cause, date, and place of death (giving street and number), and duration of last sickness of such deceased person. And it shall be the duty of the undertaker, or other person in charge of the burial of such deceased person, to state in said certificate the date and place of burial, and having signed the same to forward it to the registrar aforesaid within twenty-four hours after such death: *Provided*, That in case of death from any infectious or contagious disease said certificate shall be so made and forwarded within eight hours thereafter.

Fifth. That no interment or disinterment of the dead body of any human being, or disposition thereof in any tomb, vault, or cemetery shall be made within the District of Columbia without a permit therefor, granted by the board of health of said District, nor otherwise than in accordance therewith. And no sexton or other person shall assist in or assent to, or allow any such interment or disinterment to be made until such permit shall be given, as aforesaid; and it shall be the duty of every sexton or other person having charge of any burying ground, cemetery, tomb, or vault, as aforesaid, who shall receive any such permit to preserve and return the same to the registrar aforesaid before 6 o'clock p. m. of the Saturday following the day of burial; and no sexton, undertaker, or other person shall bury or cause to be buried the body of any deceased person within the District of Columbia except in such grounds as are now known and used as burial grounds or such as shall hereafter be by law designated and authorized to be used as such.

Sixth. That no dead body or part of the dead body of any human being shall be in any manner carried or conveyed from, in, to, or through the District of Columbia by any person or by means of any boat, vessel, car, stage, or other vehicle, or by any public or private conveyance without a permit therefor first granted by the board of health of said District; and when the remains of any deceased person are to be con-

vayed, transferred, or removed beyond the limits of the District of Columbia it shall be the duty of the person or agent or officer of the corporation having charge of the conveyance, transfer, or removal to detach, sign, and return the coupon attached to said permit to the registrar of vital statistics of the board of health aforesaid before 5 o'clock p. m. of the Saturday following the conveyance, transfer, or removal of said remains: *Provided*, That the same effect may be given by said board to a burial or transit permit issued by the proper authority of any other place or jurisdiction when the death of the person named in the permit shall have occurred within such place or jurisdiction.

Seventh. That whenever a permit for burial is applied for, in case of death without the attendance of a physician, or if it be impossible to obtain a physician's certificate, it shall be the duty of the health officer to investigate the cause and circumstances of such death, to make and sign the certificate required by section 4 of these regulations, and if not satisfied as to the cause and circumstances of such death he shall so report to the board of health, who shall refer the case to the coroner of the District for investigation and report, and said coroner is hereby required to make such investigation and report.

Eighth. That it shall be the duty of every physician, accoucher, midwife, undertaker, sexton, or superintendent of any cemetery, or other person having charge of the same, practicing medicine or doing business within the District of Columbia, to register his or her name in a book or books to be provided for such purpose at the office of the board of health of said District, giving full name, residence, and place of business, and in case of removal from one place to another in said District, to make change in said register accordingly.

Ninth. That any person who shall violate or aid and abet in violating any of the provisions of the foregoing regulations shall, upon conviction thereof by competent judicial authority, be punished by a fine of not less than twenty-five nor more than two hundred dollars for each and every such offense.

Tenth. That all rules, regulations, and ordinances heretofore passed by this board inconsistent with the provisions of these regulations be, and the same are hereby, repealed.

Eleventh. That these regulations shall take effect and be in force on and after the first day of August, A. D. 1874.

DISTRICT OF COLUMBIA, BOARD OF HEALTH,
Washington, August 28, 1874.

It is hereby ordered that physicians required to register their names under the eighth regulation of the board, to secure a full and correct record of vital statistics, do so upon a license received from some chartered medical society, or upon a diploma received from some medical school or institution.

Second. That the expression "physical condition," as employed in the statute heretofore enacted by the legislative assembly of the District, and incorporated in the third regulation, be defined as follows: "*The general physical condition*," whether healthy or unhealthy. But in no case will the board require in the enforcement of this rule that sick-bed or confidential communications made to physicians be revealed in the report required by this third regulation.

Third. That on and after the fifteenth day of next month, by which time all physicians of the city may have registered according to the requirements of the board, the regulation with regard to penalties be rigidly enforced; and that up to that date the regulation with regard thereto, as far as any violations thereof have occurred, and as far as this board is concerned, as prosecutors, the same be not enforced.

ACTS OF THE LEGISLATIVE ASSEMBLY, DISTRICT OF COLUMBIA, AFFECTING THE HEALTH DEPARTMENT.

CHAP. XLVIII.—AN ACT in relation to reports of births within the District of Columbia.

Be it enacted by the legislative assembly of the District of Columbia, That it shall be the duty of every physician, accoucher, or midwife who shall attend at the birth of any infant within the District of Columbia to forward a report to the board of health of said District within six days after such birth, stating distinctly the date of birth, the sex and color of the child thus born, its physical condition, whether stillborn or not, and the name and nativity of the parents of such child; and any such physician, accoucher, or midwife who shall fail to report as herein required shall be punished by a fine of not less than five nor more than ten dollars for each and every such offense.

SEC. 2. *And be it further enacted*, That all fines imposed under the provisions of this act shall be for the use of the District of Columbia.

Approved August 18, 1871.

CHAP. LIX.—AN ACT in relation to draining certain lots and for other purposes.

Be it enacted by the legislative assembly of the District of Columbia, That any person or persons owning any lot or lots bordering on a public or private sewer will henceforth be required to drain such lot or lots into the sewer bordering thereon, and also drain all slops and water-closets into such sewer whenever the board of health shall decide upon the necessity for so doing.

SEC. 2. And be it further enacted, That if any person or persons owning such lot or lots shall neglect or refuse to comply with the requirements of the first section of this act within thirty days after a written notice has been served upon him or them by a member of the sanitary metropolitan police, under authority or instruction from the board of health, or if such lot or lots be vacant and no owner or agent can be found within the District, after a written notice has been posted upon the lot or lots for the period aforesaid by a member of said sanitary police, then the board of health shall cause the said premises to be properly drained, to the satisfaction of the board of public works, and the cost thereof, including the proportionate cost of such private sewer as may be thus made, shall be chargeable to the property and be a lien thereon, to be collected in the same manner as other special taxes on real estate are collected.

SEC. 3. And be it further enacted, That where it has been found necessary to drain into a private sewer the party owning or constructing such private sewer shall be entitled to such remuneration as may be deemed just by the board of public works, and the premises drained shall be assessed for such remuneration, which shall be collected as provided for in section 2.

SEC. 4. And be it further enacted, That all acts or parts of acts inconsistent with this act be, and the same are hereby, repealed.

Approved August 21, 1871.

CHAP. CVIII.—AN ACT prescribing the duties of certain officers for the District of Columbia, and fixing their compensation.

*SEC. 13. And be it further enacted, That it shall be the duty of the coroner to hold an inquest over any person found dead in the District of Columbia when the manner and cause of death shall not be already known as accidental or in the course of nature. No coroner's jury shall receive any fee or compensation for services as such, and said coroner is hereby authorized and empowered to issue his certificates to the auditor for the payment of such expenses as may be necessary for the interment of any person over whom he has held an inquest, and whose body is not claimed by friends or relatives: *Provided*, That the amount of such expenses shall not exceed the sum of ten dollars. He shall make a monthly report to the board of health of the number of inquests held by him during the month last past before said report, with a full description, as far as may be, of the age and sex of persons, color and nationality, the cause and mode of their death, and such other particulars as may be necessary to their identification in case of strangers and unknown persons. He shall also, immediately after holding any inquest, deposit in some bank in the city of Washington, subject to the order of the governor, all moneys, all other property, and all other effects, with the property clerk of the police department, which shall be found upon the person of those over whom he shall hold inquest, as hereinbefore provided. He shall receive a salary of two thousand dollars per annum, and give bond, to be approved by the governor, in the sum of five thousand dollars, conditioned for the faithful performance of his duties.*

Approved August 23, 1871.

CHAP. IV.—AN ACT for the prevention of diseases in the District of Columbia.

Be it enacted by the legislative assembly of the District of Columbia, That it shall be the duty of the board of health of the District of Columbia, whenever in their judgment the said District is threatened with, or affected by, any formidable epidemic infectious or contagious disease, to issue or cause to be issued such orders, regulations, and instructions as may in their judgment be deemed effective for the prevention or removal of such disease; which orders, regulations, and instructions shall be advertised in at least two daily papers in the District of Columbia for a period of thirty days; said orders, regulations, and instructions to be and remain in

full force and effect until by the said board revoked: *Provided*, That the same may from time to time be modified in such manner as, in the judgment of said board, shall be deemed necessary; said orders, regulations, and instructions to be subject to the approval of the governor.

SEC. 2. *And be it further enacted*, That the orders, regulations, and instructions aforesaid shall include orders, regulations, and instructions for the speedy interment of the dead; for house to house visitation; for the dispensing of disinfectants to the poor, which may be calculated to prevent the spread of such disease; for vaccination; for the isolation of any person afflicted with such disease, and affording such persons afflicted or threatened with such disease such aid or hospital accommodations as circumstances may require; said orders, regulations, and instructions shall further include directions for cleansing and purifying, ventilating and disinfecting dwellings, alleys, gutters, privies, cesspools, and the like; clothing, bedding, furniture, and the like, or, in case of necessity, in their judgment, the destruction of such clothing, bedding, or furniture of a textile nature: *Provided*, That in the event of the bedding, clothing, or furniture of poor persons, they shall be reasonably compensated for the loss of the same out of any moneys in the treasury of the board of health not otherwise appropriated.

SEC. 3. *And be it further enacted*, That whenever, in their opinion, the complete isolation of any person suffering from any such disease (the same being an inmate of any tenement house, lodging house, boarding house, or hotel in the District of Columbia) can not be secured by other means, such persons shall be removed as expeditiously as possible, under direction of the board of health, to the public hospital for treatment, and any person suffering from any dangerous infectious or contagious disease, or any person having the care, charge, or control of such diseased person, who shall refuse to comply with the provisions of this section, or who shall resist the enforcement thereof by proper authority, shall be liable to a fine of not less than ten dollars, nor more than fifty dollars; and in case of the person having charge or control of such diseased person, imprisonment in the District jail for a period of not more than thirty days, in addition to the fine aforesaid.

SEC. 4. *And be it further enacted*, That the proprietor of any tenement house, lodging house, boarding house, or hotel in the District of Columbia shall, in the event of any person living in such house becoming afflicted with any such disease, at once notify the board of health thereof, in writing. For a refusal to give the notice herein provided, the person so offending shall be liable to a fine of not less than ten dollars nor more than fifty dollars for each offense.

SEC. 5. *And be it further enacted*, That any person suffering from any such infectious or contagious disease, who shall willfully expose himself in any street, public place, or conveyance, or any person having the care, charge, or control of such diseased person, or any owner or driver of any such conveyance, who does not immediately provide for the disinfection of the same, after it has conveyed such diseased person, and any person who gives, lends, sells, transmits, or exposes any clothing, bedding, rags, or other things which have been exposed to infection, shall, on conviction, be liable to a penalty of not less than ten dollars nor more than one hundred dollars.

SEC. 6. *And be it further enacted*, That any person who shall let to any other person any house, room, or part of a house in which any patient has been confined by reason of such disease, without having such room, house, or part of a house completely disinfected to the satisfaction of the board of health, as certified by them, such person shall be liable to a penalty of not less than ten dollars nor more than fifty dollars for each offense.

SEC. 7. *And be it further enacted*, That all fines imposed by the provisions of this act shall be recovered as other fines are recovered for the use of the District of Columbia.

SEC. 8. *And be it further enacted*, That the expenses incurred in carrying the provisions of this act into effect shall be paid out of the treasury of the board of health.

SEC. 9. *And be it further enacted*, That all acts and parts of acts of the legislative assembly of the District of Columbia inconsistent with the provisions of this act be, and the same are hereby, repealed.

SEC. 10. *And be it further enacted*, Whereas an emergency exists, therefore this act shall take effect on its approval by the governor.

Approved June 19, 1872.

AN ACT to create a revenue in the District of Columbia by levying a tax upon all dogs therein, to make such dogs personal property, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be levied a tax of two dollars each per annum upon all dogs owned or kept in the District of Columbia; said tax to be collected as other taxes in said District are or may be collected.

SEC. 2. It shall be the duty of the collector of taxes, upon receipt of said tax, to give to the person paying the same, for each dog so paid for, a suitable metallic tag, stamped with the year, showing that said tax has been duly paid; and he shall keep a record of all such payments, with the date thereof, and the name, color, and sex of such dog, and the name of the person claiming any dog so paid for; a copy of such record, certified under the hand and official seal of the said collector, which shall be given to any person demanding the same, upon payment of twenty-five cents therefor, shall be prima facie evidence of such payment in any court in the District of Columbia.

SEC. 3. The poundmaster of the District of Columbia shall, during the entire year, seize all dogs found running at large without the tax tag, issued by the collector aforesaid, attached, and shall impound the same; and if, within forty-eight hours, the same are not redeemed by the owners thereof, by the payment of two dollars, they shall be sold or destroyed, as the poundmaster may deem advisable; and any sale made by virtue hereof shall be deemed valid to all intents and purposes, in all the courts of the District of Columbia.

SEC. 4. Any dog wearing the tax tag hereinbefore provided for shall be permitted to run at large in the District of Columbia, and shall be regarded as personal property in all the courts of said District; and any person injuring or destroying the same shall be liable to a civil action for damages, which, upon proof of said injuring or killing, may be awarded in a sum equal to the value usually put upon such property by persons buying and selling the same, subject to such modification as the particular circumstances of the case may make proper.

SEC. 5. Any person owning any dog so recorded in the collector's office shall be liable in a civil action for any damage done by said dog to the full amount of the injury inflicted.

SEC. 6. It shall be the duty of any person owning or possessing a dog to place, or cause to be placed and kept, around the neck of such dog, a collar, on which shall be marked and engraved, in legible and durable characters, the name of the owner or possessor, and the letters "D. C.", and to which collar must be attached the insignia or tax tag furnished by the District tax collector, in accordance with the first and second sections of this law, under the penalty of not less than five nor more than ten dollars; and if any person shall put, or cause to be put, a collar, with the insignia or tax tag, around the neck of any dog owned or possessed by any person or persons residing in the District, without having obtained a license for keeping such animal, he, she, or they shall forfeit and pay the sum of not less than five nor more than ten dollars for each and every offense.

SEC. 7. Whenever it shall be made to appear to the Commissioners that there are good reasons for believing that any dog or dogs within the District are mad, it shall be the duty of the Commissioners to issue a proclamation requiring that all dogs shall, for a period to be defined in the proclamation, wear good, substantial muzzles securely put on, so as to prevent them from biting or snapping; and any dog going at large during the period defined by the Commissioners without such a muzzle shall be taken by the poundmaster and impounded, subject to the provisions of section three.

SEC. 8. Any person who shall remove, or cause to be removed, the collar and insignia or tax tag from the neck of any dog, or entice any properly licensed dog into any inclosure for the purpose of taking off its collar or insignia, or shall for such purpose decoy or entice any animal out of the inclosure or house of its owner or possessor, or shall seize or molest any dog while held or led by any person, or shall bring any dog into the District for the purpose of taking up and killing the same, shall forfeit and pay a sum of not more than twenty dollars.

SEC. 9. If any owner or possessor of a fierce or dangerous dog permit the same to go at large in the District of Columbia, to the danger or annoyance of the inhabitants, he shall forfeit and pay, for the first offense, ten dollars; for the second, a sum not exceeding twenty dollars; and upon a third conviction for the same offense the Commissioners shall immediately cause the dog, upon account of which the conviction takes place, to be slain and buried.

SEC. 10. That all acts or parts of acts now in force in the District of Columbia inconsistent with the provisions of this act be, and the same are hereby, repealed.

Approved June 19, 1878.

EXCERPTS FROM WEBB'S DIGEST OF THE LAWS OF THE CORPORATION OF WASHINGTON.

SEC. 1 (page 5). It is not lawful for butchers or other persons to keep beef cattle or other animals intended for slaughter within seventy-five feet of any dwelling house, without the consent of both occupant and owner of said dwelling; and it shall be the duty of the police officers to notify persons so offending to immediately remove such animals, and if the person or persons so notified shall refuse or neglect to obey within twenty-four hours thereafter, they shall be subject to a fine of five dollars, and a fine of twenty dollars for each day the said cattle are suffered to remain, and any police officer refusing or willfully neglecting to perform the duty prescribed shall be punished by a fine of five dollars, and shall be dismissed from office, said fines to be collected and applied as other fines under this corporation.

SEC. 2 (page 44). It shall be unlawful for any person to store, put, or place bones which shall have been purchased or bartered in any house, storeroom, stable, building, or place, within two hundred feet of any dwelling house, other than the dwelling house of the person storing such bones, under a penalty of five dollars for each and every day that the same shall be stored, put, or placed as aforesaid; and it shall be unlawful for any person or persons to store old rags which shall have been purchased or bartered in any house, storeroom, stable, building, or place, within fifty feet of any dwelling house, other than the dwelling house of the person storing such rags, and the entire stock of old rags, so collected and stored, shall be removed from the premises or shipped at least once in every fifteen days; and any person or persons storing old rags, or refusing or neglecting to remove the same in accordance with these provisions, shall be liable to a fine of five dollars for every day that they shall so offend.

SEC. 1 (page 50). It shall not be lawful for any person or persons to erect any whitesmith or blacksmith shop within thirty feet of any dwelling house inside of the limits of the corporation, or within that distance of any dwelling house to extend any whitesmith or blacksmith shop now erected, under a penalty of not less than two nor more than five dollars for every day such erection or extension shall remain after notice shall be given by the mayor for the removal thereof, to be collected and applied as other fines.

SECS. 1 and 2 (pages 119 and 120). It shall not be lawful for any person or persons to keep, provide for, or maintain within the limits of the city of Washington a cow yard, pen, or stable, for dairy or other purposes, nearer than two hundred feet to any dwelling house other than the dwelling house of the owner or keeper of such yard, pen, or stable, under a penalty of not less than one nor more than five dollars for each day's offence so continued; to be prosecuted and recovered as other fines and penalties due the corporation are prosecuted and recovered: *Provided, however,* That nothing herein contained shall apply to persons who keep but two cows for their own immediate use; and this section shall be so construed as to permit the selling of milk by persons who keep one or two cows.

SEC. 2. The owner or keeper of any cow yard, pen, or stable within the limits of the city of Washington shall daily remove the filth from and keep clean such yard, stable, or other place, under a penalty of not less than one nor more than five dollars for each and every offence, to be recovered as other fines are.

SEC. 8 (page 214). It shall be the duty of each and every person occupying a dwelling house or store, or any other kind of building, to have the paved footwalk and gutter in front of his, her, or their premises cleaned daily from the first of May to the first of December by collecting the dirt from such gutter into piles, to be removed under the direction of the commissioners of improvements so soon as possible after it has been collected; and any person or persons who shall fail or refuse to have the paved footwalk or gutter in front of his, her, or their premises cleaned, as hereinbefore provided, shall be subject to a fine of not more than five nor less than one dollar for each and every offence.

SEC. 9 (page 214). If any person or persons shall cast, place, or lay, or cause to be cast, placed, or laid, any rubbish, oyster shells, shavings, or offal, or refuse substance of any kind whatsoever of his, her, or their trade, occupation, or business; or any coal, firewood, ashes, barrels, hogsheds, or casks of any kind; boxes, foul water, dye water, or offal from soap and candle or other manufactories; filth, stable manure, or any offensive substance or obstruction in any street, avenue, open space, public reservation, alley, or open lot, or so that the same may run into any improved street, avenue, public reservation, alley, open space, or open lot, or in the gutters of any such street, avenue, public reservation, open space, or open lot, or on any pavement, and shall not remove the same on the day on which the same shall have been so placed as aforesaid, every person so offending, or directing, or ordering the same to be done shall forfeit and pay not less than one nor more than five dollars, and

the further sum of five dollars for each and every day the same shall be suffered to remain, except the article of firewood, which may remain forty-eight hours and no longer on such street or avenue, not including the pavement thereof: *Provided*, That it shall and may be lawful for any person or persons engaged in erecting or repairing a building to occupy with the materials used in making such building; or repairing the inside, half of the breadth of the footway and one-third part of the breadth of the carriage-way, and no more, in front of any lot on which the building is being erected or repaired; said materials to be placed in such position and so arranged as may be approved of by the commissioners of improvements, under a penalty of not less than five nor more than ten dollars for each offense, and a further penalty of a like sum for every day the same may be suffered to remain, to be recovered from the owner of the property or the contractor for the erection or repairs of the building; and all materials and rubbish shall be removed by the contractor or owner of the property within five days after said building shall be completed.

SEC. 1 (page 316). It shall be unlawful for any owner or owners to occupy, rent, or cause to be rented for any dwelling houses or tenements without providing for each and every dwelling house or tenement a suitable privy for the use of the occupant of such dwelling house or tenement; and if any owner or agent shall neglect or refuse to provide such privy he shall forfeit and pay a fine of five dollars for each and every week of such neglect or refusal; and it shall be unlawful for any person or persons to make any excavation under any privy within the city, under a penalty not exceeding ten dollars for each offense.

SEC. 5 (page 358). In all cases where a drain shall be made from any lot, house, or other property into a public sewer constructed by this corporation, there shall be a good and sufficient copper or cast-iron strainer inside of the basement or cellar wall of the property so drained, to prevent any vegetable matter or filth in a solid state from passing into the sewer, and such cellar or basement shall at all times be subject to the inspection of such person as may be authorized by the mayor or corporation to examine the same; and if at any time the strainer shall be found worn out or choked with filth, or if the drain itself shall be choked with filth, the owner or occupier of the premises, either or both of them, shall be fined not less than five dollars nor more than ten dollars for the first offence, and not less than ten nor more than twenty dollars for the second or any subsequent offence, and five dollars for every twenty-four hours during which the strainer or drain shall remain out of repair or be choked up, the said fines to be recovered as other fines of this corporation are recovered.

PLUMBING REGULATIONS.

ACT authorizing the employment of an inspector of plumbing in and for the District of Columbia and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be appointed by the Commissioners of the District of Columbia an inspector of plumbing for said District, whose duty it shall be to inspect all houses in course of erection, and pass upon the plumbing and sewerage of said houses. *And the health officer of the District of Columbia is hereby authorized, under direction of the Commissioners, to execute and enforce regulations governing plumbing, house drainage, and the ventilation of house sewers; and any person who shall neglect or refuse to comply with the requirements of the said regulations when promulgated shall be punishable by a fine of from twenty-five to two hundred dollars for each and every such offense, or in default of payment of fine to imprisonment for thirty days.*

Approved January 25, 1881.

In accordance with the foregoing act of Congress, and in pursuance of authority thereby conferred, the following amended regulations are made and promulgated for the information and guidance of all concerned:

SEC. 1. These regulations governing plumbing, house drainage, and the ventilation of house sewers shall take effect and be in force in the District of Columbia from and after December 1, 1882, and all work of the character named thereafter placed in or about any structure in the said District shall be done in accordance with the provisions of the same.

SEC. 2. It shall be the duty of the inspector of plumbing, under the direction of the health officer, to sign and issue all notices and certificates; to keep a daily record of his work, including all notices and applications received, violations of these regulations, and all other matters which may pertain thereto; to make daily, weekly, and quarterly reports and an annual report of his operations to the health officer.

SEC. 3. He shall inspect all houses in course of erection, alteration, or repair as often as may be necessary, and shall see that all plumbing, drainage, and sewerage work is done in accordance with the provisions of these regulations.

SEC. 4. He shall take and subscribe an oath or affirmation that he will faithfully perform the duties of his office, and shall, before entering upon its duties, execute a bond to the District of Columbia in the sum of five thousand dollars, with three sureties, to be approved by the Commissioners, conditioned upon the faithful performance of the duties of his office and for the benefit of all persons aggrieved by his acts or neglect.

SEC. 5. It shall be the duty of every person doing business as a plumber or engaged in conducting plumbing or house drainage in the District of Columbia to register his or her name in a book to be provided for that purpose at the health department, giving full name, residence, and place of business, and in case of removal from one place to another in said District to make change in said register accordingly; and it shall be the further duty of every such person to give good and sufficient bond in the sum of five hundred (500) dollars, to be approved by the Commissioners of the District of Columbia, conditioned upon the observance of these regulations.

It shall be the duty of every such person to display at his or her place of business, in a conspicuous place, a sign with full registered name and words, "Registered Plumber," in letters not less than three inches in size.

SEC. 6. Before any portion of the drainage system of any building shall be laid or constructed there shall be filed by the owner with the health officer, for the inspector of plumbing, a plan thereof, showing the said drainage system entire from its connection with the main sewer to terminus in house, together with the location of all traps, ventilating pipes, etc. The name of the plumber who is to perform the work shall be given on said plan, which must be approved by the inspector of plumbing before any portion of the work shall be executed. A permit shall not be given for the erection of any building until said plan shall have been presented and approved.

SEC. 7. No house or premises will be allowed to be connected with water, sewer, or gas main without a permit first obtained from the engineer commissioner. The conditions of this permit must be strictly complied with, and the work must be done by the plumber in whose name the permit is given.

ACT RELATIVE TO SCARLET FEVER AND DIPHTHERIA.

AN ACT to prevent the spread of scarlet fever and diphtheria in the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act it shall be the duty of every registered practicing physician or other person prescribing for the sick in the District of Columbia to make report to the health officer, on forms to be furnished by that officer, immediately after such practitioner becomes aware of the existence of any case of scarlet fever or diphtheria in his charge; and in case such person shall fail to so report in twenty-four hours he shall be subject to a penalty of not less than five nor more than fifty dollars, and in case of a second offense the penalty shall not be less than ten nor more than one hundred dollars. In case no physician shall be in charge of such patient the householder where such case occurred, or person in charge thereof, the parent, guardian, nurse, or other person in attendance upon the sick person knowing the character of the disease shall make the report above mentioned, and in case of failure to report shall suffer the same penalties as provided for physicians in this act.

SEC. 2. That it shall be the duty of the health officer, coöperating with the attending physician, to cause a suitable placard, flag, or warning sign to be displayed from the front of the premises or apartment where any one case of scarlet fever or diphtheria is present. It shall be unlawful for any person to remove such placard, sign, or warning flag when so placed without permission of the health officer, and it shall be the duty of the said health officer, in conjunction with the attending physician to cause the premises to be properly disinfected, and to issue the necessary instructions for the isolation of the patient.

SEC. 3. That no person shall visit or attend any public or private school or place of public assemblage, or appear on the public streets or in the parks while affected with scarlet fever or diphtheria, and any adult person, parent, or guardian of a minor convicted of having knowingly violated the provisions of this act shall, upon conviction, forfeit and pay a sum not less than five nor more than fifty dollars; and it shall be the duty of physicians while in attendance upon cases of scarlet fever and diphtheria to exercise such reasonable precautions to prevent the spread of the said diseases as may be prescribed by the health officer of the District of Columbia in regulations.

SEC. 4. That no person who has convalesced from diphtheria or scarlet fever shall be allowed to attend any public or private school, seminary, or college until the attending physician shall have furnished a certificate that said patient has completely recovered, and that there is no danger of infection to other persons. All persons who shall, after convalescing from diphtheria or scarlet fever, visit schools, seminaries, or colleges without providing themselves with such certificates shall suffer the penalties provided for in section 1 of this act.

SEC. 5. That the provisions of this act shall apply to every ship, vessel, steamer, boat, or craft lying or being in the rivers, harbors, or other waters within the jurisdiction of said District, and to every tent, van, shed, hovel, barn, outhouse, cabin, or other like place, as if the same were an ordinary dwelling.

SEC. 6. That the word "regulations," as herein used, shall be held to mean also rules, orders, and amendments. The word "person in charge thereof," shall be held to mean the owner, his agent or factor, the tenant, his clerk or representative; the nurse, or any one or more persons who by reason of their position are charged with the management or care of the premises, or interested in the person afflicted. The words "practitioner of medicine," or "practitioner," shall be held to include all persons who undertake to treat persons afflicted, either gratuitously or for pay.

SEC. 7. That any person who shall knowingly make, sign, or deliver any false report or certificate herein provided for, upon conviction thereof in the police court of said District, shall be fined not less than five nor more than fifty dollars, and, in default of payment thereof, be committed to jail for not less than one nor more than twenty days.

SEC. 8. That the expenses necessarily incurred in the execution of the provisions of this act shall be borne from the general appropriation for the maintenance of the health department of the District of Columbia, and the jurisdiction of civil and criminal procedure in the enforcement of this act is hereby vested in the police court of the said District, with the same right of appeal as in other civil and criminal trials in said District.

Approved December 20, 1890.

GARBAGE REGULATIONS.

"And said Commissioners are hereby authorized to make necessary regulations for the collection and disposition of garbage in the District of Columbia, and to annex to said regulations such penalties as will secure the enforcement thereof."

Act approved March 2, 1895.

SECTION 1. The word "garbage," wherever it occurs in these regulations, shall be held to mean the refuse of animal or vegetable matter which has been used or intended for food.

SEC. 2. Occupants of dwelling houses, proprietors of boarding houses, commission warehouses, hotels, restaurants, and other places where garbage is accumulated, and owners or occupants of apartment or tenement houses, shall provide for the use of such premises a sufficient number of water-tight metal receptacles to contain all garbage which may accumulate on said premises during the usual interval between the collections of garbage therefrom, and shall keep such receptacles at all times water-tight and in good repair. Each such receptacle shall have a tight cover, provided with a handle. No person, without a permit from the health officer, shall use for the reception of garbage any receptacle having a capacity of less than three or more than ten gallons, nor more than one receptacle containing less than ten gallons.

SEC. 3. Occupants of any dwelling house, apartment or tenement house, and each proprietor of any boarding house, commission warehouse, hotel, restaurant, and other place where garbage is accumulated, shall cause all garbage from his or her premises to be put into the receptacle provided for that purpose. Each person aforesaid shall cause such receptacle to be kept covered at all times and to be placed and to remain, between the hours of seven o'clock a. m. and six o'clock p. m. of each day on which the collection is made from his or her premises, in such position as to be easily accessible to the garbage collector, or as may be designated by the health officer. No person shall place or cause to be placed in any garbage receptacle any substance other than garbage.

SEC. 4. Owners of premises from which garbage is to be removed having street and alley entrances shall place conspicuously at the alley entrance thereof the street and number designations in letters and figures, respectively, not less than two inches in height, so as to be easily read.

SEC. 5. It shall be unlawful for any person to alter, deface, or destroy any name of any street or number required to be displayed by these regulations.

SEC. 6. It shall be the duty of any person or persons having possession, custody, or care of meat, fish, vegetables, or provisions of any kind intended for sale as food, but which has become unfit for such use, to forthwith remove such meat, fish, vegetables, or provisions to such place as has been designated by the health officer for such purpose. It shall be unlawful for any person or persons to knowingly bring or cause to be brought into the District of Columbia any diseased, spoiled, or decayed meat, fish, vegetables, or provisions of any kind intended for food.

SEC. 7. No driver, owner, or superintendent having charge or control of any cart or other vehicle for carrying garbage shall allow such cart or vehicle to needlessly remain, nor allow a needless number of such carts or vehicles to gather before any residence, building, or place of business within the city of Washington or the more densely populated suburbs thereof; nor allow any such cart or vehicle, or anything thereto appertaining, to be in a condition needlessly filthy or offensive; nor allow any such cart or vehicle, or implement used in connection therewith, to be stored or kept in any place where needless offense is given to any person or persons. No driver of any such cart or vehicle shall occupy an unreasonable length of time in loading or unloading such cart or vehicle or in passing along any alley, street, avenue, or public road; nor allow the lid or cover of such cart or vehicle to be otherwise than securely closed except as may be necessary for the loading or unloading and cleaning of such cart or vehicle.

SEC. 8. No person other than the owner or authorized collector shall interfere with or disturb any garbage after it shall have been put in a garbage receptacle and placed in an accessible place for collection; nor shall any unauthorized person molest, hinder, delay, or in any other manner interfere with any garbage collector in the discharge of his duty.

SEC. 9. No person or persons other than such as hold permits from the health officer shall haul any garbage through or over any street, alley, or avenue in the city of Washington or its more densely populated suburbs, and each cart or other vehicle used for such purpose shall have the word "garbage" and the number of the permit in large white letters on a black ground plainly painted or attached to each side of the wagon bed. No cart or other vehicle shall be used for the collection of garbage except such as are water-tight and provided with tight-fitting covers and such as have been approved by the health officer.

SEC. 10. Any person violating any of the provisions of these regulations shall, on conviction thereof in the police court, be punished by a fine of not less than five nor more than fifty dollars for each and every offense, and in default of payment of such fine shall be imprisoned in the workhouse of the District of Columbia for not more than thirty days.

[PUBLIC—No. 97.]

AN ACT To regulate the sale of milk in the District of Columbia, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act no person shall, within the District of Columbia, keep or maintain a dairy or dairy farm without a permit so to do from the health officer of said District; application for said permit shall be made in writing, upon a form prescribed by said health officer: *Provided,* That no applicant for said permit shall be restrained from conducting business until said application has been acted upon by the health officer of the District of Columbia or his duly appointed agent. It shall be the duty of said health officer, upon receipt of said application in due form, to make or cause to be made an examination of the premises which it is intended to use in the maintenance of said dairy or dairy farm; if after such examination said premises are found to conform to the regulations governing dairies and dairy farms within the District of Columbia, said health officer shall issue the permit hereinbefore specified, without charge: *Provided,* That said permit may be suspended or revoked at any time, without notice, by said health officer whenever the milk supply from said dairy or dairy farm is exposed to infection by Asiatic cholera, anthrax, diphtheria, erysipelas, scarlet fever, smallpox, splenic fever, tuberculosis, typhoid fever, typhus fever, or yellow fever, so as to render its distribution dangerous to public health.

SEC. 2. That no person shall bring or send into the District of Columbia for sale any milk without a permit so to do from the health officer of said District; application for said permit shall be made in writing, upon a form prescribed by said health officer, and shall be accompanied by such detailed description of the dairy farm or dairy where said milk is produced or stored as said health officer may require, and by a sworn statement as to the physical condition of the cattle supplying said milk: *Provided,* That no applicant for said permit shall be restrained from conducting business until said application has been acted upon by the health officer of the District of

Columbia or his duly appointed agent. If after examination of said application said health officer is satisfied that said milk will be brought into the District of Columbia for sale or consumption without danger to public health, he shall issue, without charge to the applicant, a permit so to do, on condition that none but pure and unadulterated milk shall be, with knowledge of its impurity, brought into said District; that in the management of said dairy or dairy farm said applicant shall be governed by the regulations of the health office of the District of Columbia, approved by the Commissioners of the District of Columbia, issued for dairies and dairy farms in said District, when said regulations do not conflict with the law of the State in which said dairy or dairy farm is located, and that said dairy or dairy farm may be inspected at any time without notice by the health officer of the District of Columbia or his duly appointed representative: *Provided*, That said permit may be suspended or revoked at any time without notice by said health officer whenever the milk supply from said dairy or dairy farm is exposed to infection by Asiatic cholera, anthrax, diphtheria, erysipelas, scarlet fever, smallpox, splenic fever, tuberculosis, typhoid fever, typhus fever, or yellow fever, so as to render its distribution dangerous to public health.

SEC. 3. That no person suffering from, or who has knowingly, within a period specified by the health officer of the District of Columbia, been exposed to diphtheria, scarlet fever, erysipelas, smallpox, anthrax, or other dangerous contagious disease, shall work or assist in or about any dairy or dairy farm; no proprietor, manager, or superintendent of any dairy or dairy farm within the District of Columbia shall knowingly permit any person suffering, or exposed as aforesaid, to work or assist in or about said dairy or dairy farm.

SEC. 4. That all milk wagons shall have the name of the owner, the number of permit, and the location of dairy from which said wagons haul milk, painted thereon plainly and legibly.

SEC. 5. That all grocers, bakers, and other persons having or offering for sale milk shall at all times keep the name or names of the dairymen from whom the milk on sale shall have been obtained posted up in a conspicuous place wherever such milk may be sold or kept for sale.

SEC. 6. That no person shall offer or have for sale in the District of Columbia any unwholesome, watered, or adulterated milk, or milk known as swill milk, or milk from cows that are fed on swill, garbage, or other like substance, nor any butter or cheese made from any such milk.

SEC. 7. That no person shall knowingly offer or have for sale any milk containing more than eighty-eight per cent of watery fluid and less than twelve per cent of total milk solids, of which at least three per cent shall be of fat.

SEC. 8. That no person shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange, or deliver, skimmed milk containing less than nine and three-tenths per cent of milk solids, inclusive of fat.

SEC. 9. That no dealer in milk, and no servant or agent of such a dealer, shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange, or deliver, milk from which the cream, or any part thereof, has been removed, unless in a conspicuous place, above the center or upon the outside of every vessel, can, or package thereof, in which milk is sold, the words "skimmed milk" are distinctly marked in gothic letters, not less than one inch in length.

SEC. 10. That it shall not be lawful for any person or persons to sell or offer for sale, within the District of Columbia, milk taken from any cow less than fifteen days before or ten days after parturition, or from any cow which is known to be suffering from tuberculosis, splenic fever, anthrax, or any general or local disease which is liable to render the milk from said cow unwholesome.

SEC. 11. That it shall be the duty of the health officer of the District of Columbia, under direction of the Commissioners of said District, to make and enforce regulations to secure proper water supply, drainage, ventilation, air space, floor space, and cleaning of all dairies and dairy farms within said District; to secure the isolation of cattle suffering from any contagious disease, and to carry into effect the provisions of this act.

SEC. 12. That the health officer of the District of Columbia, or his duly appointed assistants, shall have the right to enter without previous notice, for the purpose of inspection, any dairy or dairy farm within said District.

SEC. 13. That in all cases of sampling, in the District of Columbia, milk taken for analysis shall be taken, examined, and analyzed in the presence of at least two witnesses, one of whom may be the owner of the milk or his agent; and in all cases such sampling shall be made according to the Babcock method, to wit, dumping the milk from one can to another not less than twice before sampling.

SEC. 14. That prosecutions under this act shall be in the police court of said District, on information signed by the attorney of the District or one of his assistants, and any person or persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished for the first offense by

a fine of not less than five dollars nor more than twenty-five dollars, to be collected as other fines and penalties, or by imprisonment in the workhouse for a period of not more than thirty days, and for the second offense and each subsequent offense, by a fine of not less than fifty dollars nor more than one hundred dollars, or by imprisonment in the workhouse for ninety days, or by both such fine and imprisonment, in the discretion of the court, and if the person so convicted of a second or subsequent offense hold a permit under this act, the same shall be canceled and no permit shall be issued to said person for a period of six months: *Provided*, That any person or persons under this act shall have the privilege, when demanded, of a trial by jury as in other jury cases in the police court.

SEC. 15. That all laws and parts of laws inconsistent with the foregoing be, and the same are hereby, repealed.

Approved March 2, 1895.

[PUBLIC—No. 74.]

AN ACT for the regulation of the practice of dentistry in the District of Columbia, and for the protection of the people from empiricism in relation thereto.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any person to practice dentistry in the District of Columbia unless such person shall register with the health officer in compliance with the requirements hereinafter provided.

SEC. 2. That a board to carry out the purposes of this act is hereby created, to be known as the board of dental examiners, to consist of five reputable dentists resident of and for three years last before appointment actively engaged in the practice of dentistry in the District of Columbia, to be appointed by the Commissioners of said District for terms of five years and until their successors are appointed: *Provided*, That the first five appointments shall be made for terms of one, two, three, four, and five years, respectively. A majority of said board shall constitute a quorum. Vacancies occurring in said board shall be filled by appointment of eligible persons for unexpired terms.

SEC. 3. That it shall be the duty of the board of dental examiners, first, to organize by electing one of their number president and one secretary, to provide necessary books and blank forms, and publicly announce the requirements of this act and the time, place, and means of complying with its provisions within thirty days from its passage; second, to promptly certify to the health officer for registration all who are engaged in the practice of dentistry in said District at the time of passage of this act who apply therefor; third, to test the fitness and pass upon the qualification of persons desiring to commence the practice of dentistry in said District after the passage of this act and certify to the health officer for registration such as prove, under examination in theory and practice of dentistry, qualified in the judgment of the board to practice dentistry in said District; fourth, to report immediately information of any violation of this act, and, annually, the transactions of the board to the Commissioners of the District of Columbia: *Provided*, That all graduates of dental colleges which require a three years' course of study shall be entitled to certificates upon payment of the certification fee and without examination as to their qualifications.

SEC. 4. That it shall be the duty of every person practicing dentistry in said District at the time of the passage of this act to make application to said board, in form prescribed by said board, for certification, and present the certificates thus obtained for registration to the health officer within sixty days from the passage of this act. Every such person so registering may continue to practice without incurring the penalties of this act.

SEC. 5. That persons desiring to commence the practice of dentistry in said District after the passage of this act shall first obtain a certificate of qualification from the board of dental examiners, granted under authority conferred upon said board by section three of this act, and present the same to the health officer for registration.

SEC. 6. That it shall be the duty of the health officer to register all persons presenting certificates from said board in a book kept for this purpose, and indorse upon each certificate the fact and date of such registration.

SEC. 7. That certificates issued and indorsed under the provisions of this act shall be evidence of the right of the person to whom granted to practice under this act.

SEC. 8. That anyone who shall practice or attempt to practice dentistry in the said District without having complied with the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than fifty nor more than two hundred dollars, and in default of payment of such fine shall be imprisoned not less than thirty nor more than ninety days, said

fines, when collected, to be paid into the Treasury of the United States, to the credit of the District of Columbia: *Provided*, That nothing in this act shall be construed to interfere with physicians in the discharge of their professional duties, nor with students pursuing a regular uninterrupted dental college course or in bona fide pupilage with a registered dentist.

SEC. 9. That to provide a fund to carry out and enforce the provisions of this act the board of dental examiners may charge such fees, not exceeding one dollar for each certificate and ten dollars for each examination, as will from time to time, in the opinion of said board, approved by said Commissioners, be necessary. From such fund all expenses shall be paid by the board: *Provided*, That such expense shall in no case exceed the balance of receipts.

Approved June 6, 1892.

[PUBLIC—No. 77.]

AN ACT for the promotion of anatomical science, and to prevent the desecration of graves in the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any public officer or officers, whether directors, trustees, superintendents, wardens, keepers, or managers, having lawful charge of or control over any hospital, prison, jail, or morgue, within the District of Columbia, may, with the approval of the health officer of said District, deliver to the duly authorized agent of any medical college or colleges in the District of Columbia, the bodies of such deceased persons as are required to be buried at the public expense, said bodies to be distributed among the several colleges in proportion to the number of students in each: *Provided, however*, That if the deceased person, during his last illness, requested to be buried, or if within forty-eight hours after his death any person claiming to be, and satisfying the health officer that he is, a relative by blood or marriage, or friend of the deceased, asks to have the body buried, or if such deceased person was a stranger or traveler who suddenly died, the body shall not be so delivered, but shall be buried.

SEC. 2. That before the bodies of such deceased persons as are mentioned in the first section shall be delivered to the authorized agents of any medical college in the District of Columbia notice shall be given by the person or persons having lawful charge of said bodies to the relative or friend of the deceased, if known; if not known, the death of the deceased shall be published at least once in a daily newspaper published in the city of Washington, in the District of Columbia, in which publication the full name of the deceased person shall, if possible, be given, and if such name be not known, a description of the person and apparel of the deceased, with information of the place where they may be seen, the expenses of such publication to be paid as other expenses of the District of Columbia are paid: *Provided*, That the persons named in the first section shall not deliver the body of the deceased, as provided in this act, until at least thirty-six hours shall have elapsed since the death of said deceased and giving of said notice or the publication of the same.

SEC. 3. That every person who shall have been duly authorized by the faculty of any medical college in the District of Columbia to receive such dead bodies shall, before receiving them, give to the health officer of said District a bond in the sum of two hundred dollars, with surety satisfactory to said health officer, and conditioned that each dead body shall be used only for the promotion of anatomical and surgical knowledge within the said District of Columbia, and that after having been so used the remains thereof shall be decently buried; and whosoever shall use such body or bodies for any purpose other than that aforesaid, or shall remove the same beyond the limits of the District of Columbia, and whosoever shall sell or buy such body or bodies, or in any way traffic in the same, or who shall disturb or remove bodies from graves in which they have been buried, or who shall disregard the expressed wishes of the deceased, or of his or her friends, where such wishes may be disclosed, as provided for in section one of this act, shall be deemed guilty of a misdemeanor, and shall, on conviction, be imprisoned for a term not less than two nor more than three years, at hard labor, in the jail of said District.

Approved February 26, 1895.

[PUBLIC—No. 101.]

AN ACT to regulate the practice of pharmacy in the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act, it shall be unlawful for any person, not a registered pharmacist within the meaning of this act, to conduct any pharmacy or store for the purpose of retailing, compounding, or dispensing medicines or poisons, for medicinal use, in the District of Columbia, except as hereinafter provided.

SEC. 2. That it shall be unlawful for the proprietor of any store or pharmacy to allow any person, except a registered pharmacist, to compound or dispense the prescriptions of physicians, or to retail or dispense poisons for medical use, except as an aid to, and under the immediate supervision of, a registered pharmacist. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be liable to a fine of not less than twenty-five dollars nor more than one hundred dollars for each and every such offense.

SEC. 3. That immediately after the passage of this act, and biennially thereafter, or as often as necessary, the Commissioners of the District of Columbia shall appoint three pharmacists and two physicians, all of whom shall have been residents of the District of Columbia for five years and of at least five years' practical experience in their respective professions, who shall be known and styled as Commissioners of Pharmacy for the District of Columbia, who shall serve without compensation, and who shall hold office for two years, and until their successors are appointed and qualified. Said commissioners shall, within thirty days after the notification of their appointment, each take and subscribe to an oath to impartially and faithfully discharge their duties as prescribed by this act. The position of any commissioner who shall fail to so qualify within the time named shall be vacant, and the vacancy or vacancies so occurring, or any vacancy or vacancies that may occur, shall be filled by the Commissioners of the District of Columbia.

SEC. 4. That the commissioners of pharmacy shall keep a book of registration open at some convenient place within the city of Washington, of which due notice shall be given through the public press, and shall record therein the name and place of business of every person registered under this act. It shall be the duty of said commissioners of pharmacy to register, without examination, as registered pharmacists, all pharmacists and druggists who are engaged in business in the District of Columbia at the passage of this act as owners or principals of stores of pharmacies for selling at retail, compounding, or dispensing drugs, medicines, or chemicals for medicinal use, or for compounding and dispensing physicians' prescriptions, and all assistant pharmacists, twenty-one years of age, engaged in said stores or pharmacies in the District of Columbia at the passage of this act, and who have been engaged as such in some store or pharmacy where physicians' prescriptions were compounded and dispensed for not less than five years prior to the passage of this act: *Provided, however,* That in case of failure or neglect on the part of any such person or persons to present themselves for registration within sixty days after said public notice, they shall undergo an examination such as is provided for in section five of this act.

SEC. 5. That the said commissioners of pharmacy shall, upon application and at such time and place as they may determine, examine each and every person who shall desire to conduct the business of selling at retail, compounding, or dispensing drugs, medicines, or chemicals for medicinal use, or compounding and dispensing physicians' prescriptions within the District of Columbia as pharmacists; and if a majority of said commissioners shall be satisfied that said person is competent and fully qualified to conduct said business of compounding or dispensing drugs, medicines, or chemicals for medicinal use, or to compound or dispense physicians' prescriptions, they shall enter the name of such person as a registered pharmacist in the book provided for in section four of this act.

SEC. 6. That no person shall be entitled to an examination by said commissioners of pharmacy for registration as pharmacist unless he present satisfactory evidence of being twenty-one years of age, and having served not less than four years in a store or pharmacy where physicians' prescriptions were compounded and dispensed, or is a graduate of some respectable medical college or university.

SEC. 7. That all graduates in pharmacy having a diploma from an incorporated college or school of pharmacy that requires a practical experience in pharmacy of not less than four years before granting a diploma shall be entitled to have their names registered as pharmacists by said commissioners of pharmacy.

SEC. 8. That the commissioners of pharmacy shall be entitled to demand and receive from each person whom they register as pharmacist, without examination, the sum of three dollars, and from each person whom they examine the sum of ten dollars. And in case the examination of said person should prove defective and unsatisfactory, and his name not be registered, he shall be permitted to present himself for reexamination within any period not exceeding twelve months next thereafter, and no

charge shall be made for such reexamination. The money received under the provisions of this section shall be applied to payment of such expenses as the commissioners may incur in executing the provisions of this act.

SEC. 9. Every registered pharmacist shall be held responsible for the quality of all drugs, chemicals, and medicines he may sell or dispense, with the exception of those sold in the original packages of the manufacturer, and also those known as "patent medicines;" and should he knowingly, intentionally, and fraudulently adulterate, or cause to be adulterated, such drugs, chemicals, or medical preparations, he shall be deemed guilty of a misdemeanor, and, upon conviction thereof, be liable to a penalty not exceeding one hundred dollars, and, in addition thereto, his name shall be stricken from the register.

SEC. 10. It shall be unlawful for any person, from and after the passage of this act, to retail any poisons enumerated in Schedules A and B, as follows, to wit:

SCHEDULE A.

Arsenic and its preparations, corrosive sublimate, white precipitate, red precipitate, bismuthide of mercury, cyanide of potassium, hydrocyanic acid, strychnia and all other poisonous vegetable alkaloids, and their salts, essential oil of bitter almonds, opium and its preparations, except paragonic and other preparations of opium containing less than two grains to the ounce.

SCHEDULE B.

Aconite, belladonna, colchicum, conium, nux vomica, henbane, savin, ergot, cotton root, cantharides, creosote, digitalis, and their pharmaceutical preparations, croton oil, chloroform, chloral hydrate, sulphate of zinc, mineral acids, carbolic acid, and oxalic acid, without distinctly labeling the box, vessel, or paper in which the said poison is contained, and also the outside wrapper or cover, with the name of the article, the word "poison," and the name and place of business of the seller. Nor shall it be lawful for any person to sell or deliver any poisons enumerated in Schedules A and B, unless, upon due inquiry, it be found that the purchaser is aware of its poisonous character, and represents that it is to be used for a legitimate purpose. Nor shall it be lawful for any registered pharmacist to sell any poisons included in Schedule A without, before delivering the same to the purchaser, causing an entry to be made, in a book kept for that purpose, stating the date of sale, the name and address of the purchaser, the name and quality of the poison sold, the purpose for which it is represented by the purchaser to be required, and the name of the dispenser; such book to be always open for inspection by the proper authorities, and to be preserved for reference for at least five years. The provisions of this section shall not apply to the dispensing of poisons, in not unusual quantities or doses, upon the prescriptions of practitioners of medicine. Nor shall it be lawful for any licensed or registered druggist or pharmacist in the District of Columbia to retail, or sell, or give away any alcoholic liquors or compounds, as a beverage, to be drunk or consumed upon the premises. And any violation of the provisions of this section shall make the owner or principal of said store or pharmacy liable to a fine of not less than twenty-five and not more than one hundred dollars, to be collected in the usual manner.

SEC. 11. Any itinerant vender of any drug, nostrum, ointment, or appliance of any kind, intended for the treatment of diseases or injury, or who shall, by writing, or printing, or any other method, publicly profess to cure or treat diseases, injury, or deformity, by any drug, nostrum, manipulation, or other expedient, shall pay a license of two hundred dollars per annum into the treasury of the District of Columbia, to be collected in the usual way.

SEC. 12. That any person who shall procure or attempt to procure registration for himself or for another under this act, by making or causing to be made any false representation, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be liable to a penalty of not less than twenty-five nor more than one hundred dollars, and the name of the person so fraudulently registered shall be stricken from the register. Any person, not a registered pharmacist as provided for in this act, who shall conduct a store, pharmacy, or place for retailing, compounding, or dispensing drugs, medicines, or chemicals, for medicinal use, or for compounding or dispensing physicians' prescriptions, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be liable to a penalty of not less than fifty dollars.

SEC. 13. That all fines and penalties under this act shall be collected in the same manner that other fines and penalties are collected in the District of Columbia; and it shall be the duty of the United States district attorney for the District of Columbia to prosecute all violations of this act.

SEC. 14. That all acts and parts of acts inconsistent with this act be, and the same are hereby, repealed.

Approved June 15, 1878.

1270 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

List of registered physicians practicing in the District of Columbia.

Name.	Residence.	Name.	Residence.
Acker, George N	913 Sixteenth st. N.W.	Ball, Charles A	233 G st. N.W.
Adams, Arthur C	512 B st. N.E.	Baldwin, Mosby	1002 Rhode Island ave. N.W.
Adams, B. B	927 New York ave. N.W.	Baldwin, William O	2035 F st. N.W.
Adams, C. B. S	422 Eighth st. S.E.	Balloch, E. A	1218 Twelfth st. N.W.
Adams, James Osgood ..	937 N st. N.W.	Barry, C. Neil	730 Tenth st. N.W.
Adams, J. Lee	606 North Carolina ave. S.E.	Barry, Edmund	497 E st. S.W.
Adams, Samuel S	1632 K st. N.W.	Barry, John A	St. Elizabeth.
Addison, Thomas	219 C st. N.W.	Barrington, Richard L ..	3514 N st. N.W.
Ainsworth, F. C	729 Eighteenth st. N.W.	Barnes, H. J	129 F st. N.W.
Alderman, A. H	Langdon, D. C.	Barnes, W. H	924 E st. N.W.
Alderman, Z. W	Ivy City.	Barclay, Rowan M	318 C st. N.W.
Alleger, Walter W	906 S st. N.W.	Barger, A. S	1031 New Jersey ave. N.W.
Allen, H. Jerome	421 H st. N.E.	Barnes, N. P	611 Maryland ave. N.E.
Allen, J. S	419 H st. N.E.	Barber, J. M	918 E st. N.W.
Allen, Charles	1320 G st. N.W.	Barker, Howard N	1116 H st. N.W.
Allen, C. L	1811 H st. N.W.	Battle, L. J	203 B st. N.E.
Allen, Elijah H	2226 Eleventh st. N.W.	Bidwell, W. D	918 Fourteenth st. N.W.
Allen, Maxwell H	924 Fourteenth st. N.W.	Billard, J. T	Laurel, Md.
Ames, Dellanore	1600 Thirteenth st. N.W.	Binns, Douglas H	508 Eleventh st. N.W.
Ames, James W	925 U st. N.W.	Bird, James C	1336 G st. N.W.
Antisell, Thomas, Jr ..	1311 Q st. N.W.	Birdsall, C. W	1249 Thirty-first st. N.W.
Anderson, Frank	1707 New York ave. N.W.	Bishop, Francis B	2210 Pennsylvania ave. N.W.
Anderson, Joseph W	1911 Eleventh st. N.W.	Blackwell, Edward	1333 G st. N.W.
Appleby, James F. R ..	1430 Thirty-third st. N.W.	Blanchard, F	720 H st. N.E.
Arwine, Lotta R	127 Sixth st. N.E.	Blake, Louisa M	1405 New York ave. N.W.
Arwine, James T	127 Sixth st. N.E.	Blackstone, Thomas C ..	1141 Seventh st. N.W.
Armstrong, William J ..	1629 Connecticut ave. N.W.	Blackburn, Isaac W	Government Hospital for the Insane.
Ashford, Edwin W	918 Seventeenth st. N.W.	Bland, Cora	1121 Tenth st. S.W.
Atkinson, Wade Hamp- ton.	1011 G st. N.W.	Blair, Joseph D	2023 Vermont ave. N.W.
Atwood, Oliver M	1935 Eleventh st. N.W.	Bliss, J. E	1012 Fourteenth st. N.W.
Ayers, Wilburn Watson ..	1408 H st. N.W.	Boarman, Charles V	1104 Maryland ave. S.W.
Barton, Wilfred M	Columbia Hospital.	Bogan, Fred M	421 G st. N.W.
Barnes, S. M	430 College st. N.W.	Bogan, Martin Van Buren.	606 Massachusetts ave. N.W.
Barrie, George	1403 New York ave. N.W.	Bogan, Samuel W	421 G st. N.W.
Barstow, Edward	712 East Capitol st.	Bogue, A. P	319 Eighth st. N.E.
Barstow, Kate	712 East Capitol st.	Bond, Samuel S	813 First st. N.W.
Barricelli, L. E	1711 G st. N.W.	Bonebrake, J. H	917 Third st. N.W.
Barry, J. P	1246 H st. N.E.	Boswell, A. W	710 Tenth st. N.W.
Bawens, G. J	Howard University.	Boss, Rufus D	146 East Capitol st.
Bayne, John W	116 Second st. S.E.	Bovee, J. Wesley	1404 H st. N.W.
Bell, Leonard	Emergency Hospital.	Bowen, Charles H	601 Massachusetts ave. N.W.
Beall, Benjamin M	1146 Third st. N.W.	Bowen, H. Martin	Emergency Hospital.
Beall, W. W	114 Sixth st. S.E.	Bowen, William Sinclair.	1523 I st. N.W.
Beatty, Hugh W	631 Second st. N.W.	Bowens, G. Jarvis	Howard University.
Beatty, Louis K	610 East Capitol st.	Boyd, George W	121 Second st. N.E.
Beatty, Walter K	610 East Capitol st.	Boyd, J. A	1537 Fourteenth st. N.W.
Beattie, Uray	910 East Capitol st.	Boyle, Cornelius B	1615 S st. N.W.
Beckett, George M	912 New York ave. N.W.	Boyle, Frank C	1355 U st. N.W.
Beddenbaugh, J. P	2350 Sixth st. N.W.	Brackett, John E	1310 Rhode Island ave. N.W.
Behrend, Adajah	1214 K st. N.W.	Braden, F. W	1911 New Hampshire ave.
Behrend, E. B	Garfield Hospital.	Bradfield, J. D	1501 Connecticut ave. N.W.
Belt, E. Oliver	1313 H st. N.W.	Branson, J. H	Homeopathic Hospital.
Bennett, M. C	1728 Eighth st. N.W.	Bray, John	1222 C st. S.W.
Bennett, Harrison H ..	617 F st. N.W.	Brayshaw, J. Lacy	1322 Ninth st. N.W.
Bennett, H. M	Takoma Park.	Brewer, Fannie C	1607 T st. N.W.
Bennett, Wm. A	Washington Asylum Hospital.	Brewer, Madison Mills ..	1524 Twenty-eighth st. N.W.
Bennitt, William W	1928 Fourteenth st. N.W.	Brewer, J. W	3003 P st. N.W.
Beresford, George C	719 Eighth st. S.E.	Briard, William H. L	1017 Fifteenth st. N.W.
Berry, John R	611 Seventh st. N.W.	Briscoe, Walter C	317 C st. N.W.
Berryhill, A. F	Langham Hotel.	Bromwell, Josiah R	1147 Connecticut ave. N.W.
Bernman, Isador	1016 I st. N.W.	Bronson, Charles E	928 E st. N.W.
Bettes, Eugene	718 Nineteenth st. N.W.	Brooks, Floyd V	465 Florida ave. N.W.
Bevier, W. D	1420 Eleventh st. N.W.	Brooks, John H	Brookland, D. C.
Bacon, Charles A	1312 Connecticut ave.	Brooks, Philip B	320 Third st. S.W.
Babbitt, Z. B	810 Eleventh st. N.W.	Brosius, Mary A	906 H st. N.W.
Baggett, John B	1918 Sixteenth st. N.W.	Bowen, Charles W	902 Fourteenth st. N.W.
Bagley, George A	1012 Ninth st. N.W.	Brown, Robert W	1224 R st. N.W.
Baker, Arthur H	Seventeenth st. and Howard ave. N.W.	Brown, M. H	1115 Fifteenth st. N.W.
Baker, Frank	1315 Corcoran st. N.W.	Brown, Walter H	1017 B st. S.E.
Baker, Leigh	1110 New York ave. N.W.		
Baker, R. W	815 Seventeenth st. N.W.		
Baker, William	916 S st. n.w.		

List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Brunkheimer, Moses	737 Sixth st. NW.	Coates, F. Pearce	St. James Hotel.
Brunbaugh, G. M.	904 Massachusetts ave. NW.	Cobb, James S.	421 Sixth st. NW.
Brummett, R. B.	902 Pennsylvania ave. SE.	Coe, Anton	1522 Caroline st.
Brunner, Jas. F.	647 East Capitol st.	Coffron, W. H.	5 Tennessee ave. NE.
Bryan, Joseph	806 Seventeenth st. NW.	Cole, A. B.	1519 M st. NW.
Buck, Robert H.	1512 Ninth st. NW.	Cole, W. F.	1009 G st. NW.
Buchanan, C. M.	918 Virginia ave. SW.	Cole, George R. L.	424 Seventh st. SW.
Budlong, O. W.	250 Eighth st. NE.	Coleman, Horace	936 K st. NW.
Bulkeley, John W.	805 Twelfth st. NW.	Collins, Albert R.	368 E st. SW.
Bunnemeyer, Bernard	1433 U st. NW.	Collins, C. R.	1125 Fourteenth st. NW.
Burch, William T.	2210 I st. NW.	Collins, John T.	623 Second st. NW.
Burghart, Caroline A.	457 Missouri ave.	Collins, E. J.	823 Eleventh st. NE.
Burrett, Alice	1129 Fourteenth st. NW.	Compton, W. P.	922 Seventeenth st. NW.
Burnett, Swan M.	1770 Massachusetts ave.	Connell, George E.	3230 N st. NW.
Burke, Thomas	1031 Eighth st. NW.	Conner, William H.	1623 Tenth st. NW.
Burnett, William W.	1331 Q st. NW.	Cooke, Robert R.	1502 H st. NW.
Burton, George C.	810 H st. NE.	Cooke, B. J.	1018 R st. NW.
Burwell, J. Page	904 Fourteenth st. NW.	Cook, G. Wyeth	3 Thomas circle.
Busey, Samuel C.	1545 I st. NW.	Corbin, William E.	1005 Twenty-third st. NW.
Bushnell, John H.	1122 Eleventh st. NW.	Corey, Waterman F.	1305 R st. NW.
Butler, William K.	1107 Eleventh st. NW.	Cornish, Mabel	225 First st. SE.
Byrne, P. J.	2115 H st. NW.	Corson, J. K.	Washington Barracks.
Byrne, W. C.	214 D st. NW.	Cones, Elliott	1726 N st. NW.
Byrns, William F.	35 B st. SE.	Coumbe, John T.	1312 Ninth st. NW.
Caldwell, Charles T.	Tenth and S sts. NW.	Coumbe, A. G.	1312 Ninth st. NW.
Caldwell, William A.	321 East Capitol st.	Coumbe, Oscar H.	805 Third st. SE.
Callan, Cornelius V. N.	1422 F st. NW.	Cox, S. Clifford	Hyattsville, Md.
Calvert, Finley H.	1818 Third st. NW.	Craig, Henry K.	Children's Hospital.
Cameron, Malcolm	915 E st. SE.	Crease, Henry George	216 Third st. NW.
Camp, Herbert M.	111 California st. NW.	Crittenden, Thomas B.	928 New York ave. NW.
Campbell, C. B.	711 P st. NW.	Crook, Harrison	508 1/2 Thirteenth st. NW.
Campbell, L. D.	1411 Pennsylvania ave. NW.	Crosson, Henry J.	819 Nineteenth st. NW.
Campbell, T. B.	1859 Harewood ave. NW.	Crusor, Collins B.	2813 Dunbarton ave.
Canabiss, George W.	1906 K st. NW.	Crush, Alice S.	712 Eighth st. NW.
Cannon, Walter D.	1205 M st. NW.	Cudlipp, Malcolm A.	635 M st. NW.
Cannfield, Herman	821 Seventeenth st. NW.	Cushing, Maria J.	937 F st. NW.
Capehart, B. Ashbourne	806 Nineteenth st. NW.	Custis, George W. N.	110 East Capitol st.
Cardoza, George M.	1459 Pierce place NW.	Custis, J. B. Gregg	111 East Capitol st.
Carlisle, George M.	229 Indiana ave.	Custis, M. A.	631 East Capitol st.
Carmau, Louis Dal.	1351 Q st. NW.	Curtis, J. W.	1711 Eighth st. NW.
Carmichael, D. A.	1308 F st. NW.	Curtis, W. P.	1727 Tenth st. NW.
Carmichael, R. B.	723 Eighteenth st. NW.	Cunningham, J. M.	915 Sixth st. NW.
Carpenter, James A. B.	439 I st. NW.	Curriden, G. A.	419 Ninth st. NW.
Carpenter, John E.	623 North Carolina ave. SE.	Currier, G. R.	509 Second st. NE.
Carpenter, John B.	1641 Tenth st. NW.	Cuthbert, Middleton F.	1462 Rhode Island ave. NW.
Carter, Edward P.	1412 I st. NW.	Czarra, S. A.	16 Fourth st. NE.
Carr, William P.	1319 Thirteenth st. NW.	Dale, John	129 Third st. NE.
Carter, D. D.	1714 L st. NW.	Daly, John A.	912 New York ave. NW.
Carraher, J. V.	820 E st. SE.	Daniels, U. J.	1024 Twenty-first st. NW.
Carroll, James	633 Acker st. NE.	Daniels, L. P.	2025 Vermont ave. NW.
Carroll, James J.	1322 Thirteenth st. NW.	Daniels, R. A.	715 Fifth st. NW.
Carroll, Joseph	2202 Fourteenth st. NW.	Danter, J. F.	313 M st. NW.
Carroll, R. L.	948 R st. NW.	Darby, John J.	451 O st. NW.
Chadwick, Dewitt C.	61 I st. NW.	Darling, Benjamin F.	613 F st. NW.
Chamberlain, William L.	944 New York ave. NW.	Darling, Henry	Brightwood, D. C.
Chamberlain, Frank T.	226 New Jersey ave. SE.	Darrah, A. H.	225 Eighth st. NE.
Charles, F. M.	704 Q st. NW.	Davidson, E. Y.	406 New Jersey ave. SE.
Chapman, N.	921 G st. NW.	Davidson, George S.	428 H st. NW.
Chappell, John W.	Tenley, D. C.	Davidson, Falconer	404 New Jersey ave. SE.
Clew, Thomas J.	226 East Capitol st.	Davison, J. C.	1110 Fourth st. NW.
Childs, C. W.	414 1/2 Third st. SW.	Davies, James	318 Indiana ave. NW.
Choate, Rufus	1338 H st. NW.	Davis, Lewellyn F.	1108 New York ave. NW.
Churel, James R.	1414 Fifteenth st. NW.	Davis, C. A.	1013 Sixteenth st. NW.
Church, J. W.	401 Seventh st. NW.	Dawson, C. F.	135 Carroll place SE.
Christie, Arthur	Anacostia, D. C.	Deale, Henry B.	1224 Fourteenth st. NW.
Clark, James J.	1015 L st. NW.	Dean, Julian W.	Benning, D. C.
Clark, T.	1400 K st. NW.	Demorest, C. L.	710 East Capitol st.
Clarke, James C.	Homeopathic Hospital.	Denison, R. W.	1114 New York ave. NW.
Clayton, James C.	1813 Fifteenth st. NW.	Dexter, James	453 C st. NW.
Clarke, George C.	12 Fourth st. SE.	Devereux, T. R.	815 Vermont ave. NW.
Clayton, T. A.	6 Dupont circle.	Dillenback, William J.	1841 Fourteenth st. NW.
Clement, Alfred B. C.	Mount Pleasant, D. C.	Dixon, S. H.	U. S. Marine Barracks.
Clemens, E. P.	2008 Eighth st. NW.	Dixon, W. S.	1421 Twenty-ninth st. NW.
Clemens, J. Edwin	223 Fifth st. SE.		
Clemens, P. H.	517 Second st. NW.		

1272 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Dobson, William H.	100 Eleventh st. NE.	Fletcher, G. H.	936 Twenty-fourth st. NW.
Dodge, Robert H.	3143 P st. NW.	Forwood, W. H.	Soldiers' Home.
Donohue, Florence.	1134 Eighth st. NW.	Foster, Frank J.	944 S st. NW.
Dooley, F. X.	1406 Corcoran st. NW.	Foster, Romulus Adams	2029 Q st. NW.
Dolan, P. B.	505 Twelfth st. NW.	Foster, Richard.	430 College st.
Dorsey, J. H.	1415 P st. NW.	Foster, W. W.	909 L st. NW.
Dorsey, Lloyd.	913 Massachusetts ave. NW.	Fowler, Emma Wallace	621 Florida ave.
Dorsey, R. M.	1020 Seventeenth st. NW.	Fowler, Will C.	1143 Fifth st. NW.
Dongal, C. H.	1219 Twelfth st. NW.	Fox, George L.	1803 H st. NW.
Douglas, A. S.	444 Massachusetts ave. NW.	Francis, John R.	2112 Pennsylvania ave. NW.
Douglas, J. F.	516 Seventh st. NE.	Franzoni, Charles W.	810 H st. NW.
Douglas, Robert.	1209 F st. NW.	Freer, James A.	1523 I st. NW.
Dovilliers, Leopold V.	1221 Thirteenth st. NW.	Freeze, H. H.	510 Seventh st. NE.
Downes, Julia D.	420 C st. SE.	French, E. M.	807 Tenth st. NW.
Drawbaugh, John H.	627 Pennsylvania ave. NW.	French, Ricardo.	1316 T st. NW.
Drenford, George.	Catholic University.	French, William B.	506 East Capitol st.
Dresbach, H. V.	1114 Tenth st. NW.	Friedrich, Leon L.	329 East Capitol st.
Du Bose, George Parcel.	2903 Q st. NW.	Frost, E. F.	Belvedere Hotel, Third and C sts. NW.
Duffy, H. Clarence.	1255 Ninth st. NW.	Fry, Henry D.	1133 Fourteenth st. NW.
Dufour, Clarence R.	1009 H st. NW.	Furniss, H. W.	1905 K st. NW.
Dulaney, Joshua L.	926 I st. NW.	Gage, Mary E.	529 New Jersey ave. NW.
Dumble, H. L.	120 E st. NE.	Gaines, Richard L.	2131 Seventh st. NW.
Dumas, Mitchell O.	1908 Eleventh st. NW.	Gallagher, Matilda J.	112 Fourth st. SE.
Duval, W. T. S.	1009 L st. NW.	Gallagher, M. F.	621 E st. NW.
Dyer, John I.	1438 Corcoran st. NW.	Garrison, F. H.	1427 R st. NW.
Dye, H. S.	1400 K st. NW.	Gardner, Frank A.	1016 Fourteenth st. NW.
Eaton, P. H.	1318 T st. NW.	Gardner, Joseph N.	903 Twenty-third st. NW.
Edes, Robert T.	1214 Eighteenth st. NW.	Garvin, Mary J.	La Petra Hotel.
Eddie, G. L.	War Department.	Gatehell, William F.	803 East Capitol st.
Edson, Susan A.	1308 I st. NW.	Geddes, William.	221 E st. NW.
Eggleston, J. D.	1403 Park st., Mt. Pleasant.	Geddings, R. M.	1813 M st. NW.
Eggleston, G. W.	1514 Q st. NW.	Gehring, G. P.	623 F st. NW.
Elliott, M. S.	Garfield Hospital.	Gibbs, B. Frank.	1730 Q st. NW.
Elliott, Henry R.	Garfield Hospital.	Gibbs, Edwin A.	1608 Thirteenth st. NW.
Eliot, Johnson.	918 E st. NW.	Gibson, T. C.	Thirty-first and Road sts. NW.
Eliot, Llewellyn.	1106 P st. NW.	Gibbs, Thomas F.	935 Rhode Island ave.
Elliott, J. B.	1529 I st. NW.	Gibson, R. H.	1215 C st. SW.
Elvert, Samuel.	Freedmen's Hospital.	Gihou, A. L.	U. S. Naval Hospital.
Eldridge, Walter S.	141 Jefferson st., Anacostia.	Gilbert, Charles B.	1011 H st. NW.
Eldridge, Hattie M.	141 Jefferson st., Anacostia.	Gilbert, J. A.	Freedmen's Hospital.
Elgin, Fisk.	207 Ninth st. SW.	Gill, William T.	505 O st. NW.
Ellis, Hannah C.	1457 Fourteenth st. NW.	Gillette, Hub.	Thirteenth and V sts. NW.
Ellis, J. C.	1457 Fourteenth st. NW.	Gladmon, Edwin.	501 New Jersey ave. NW.
Ellyson, R. N.	643 Q st. NW.	Glazebrook, Larkin.	1403 New York ave. NW.
Emmons, Charles M.	1019 G st. SE.	Gleeson, James K. P.	1316 R st. NW.
English, Charles H.	1107 G st. NW.	Glennan, J. D.	420 Florida ave. NW.
Erbach, Amelia.	21 Third st. NE.	Glennan, Patrick.	420 Florida ave. NW.
Erwin, James C.	1944 Ninth st. NW.	Gobrecht, William H.	1222 Eleventh st. NW.
Eslin, James T.	901 S st. NW.	Godding, Wm. W.	Government Hospital for the Insane.
Evans, A. W.	110 Florida ave. NW.	Godfrey, Charles E.	616 F sts. NW.
Evans, W. B.	1926 Twelfth st. NW.	Goldsborough, Edmund K.	1331 K st. NW.
Evans, J. M.	1925 H st. NW.	Goines, William H.	500 P st. NW.
Evans, Warwick.	1105 Ninth st. NW.	Goodell, Charles F.	920 B st. SW.
Ezdorf, R. H. von.	Columbia Hospital.	Goodman, William R.	216 Thirteen-and-a-half st. SW.
Fadeley, G. B.	921 F st. NW.	Goodlove, William M.	216 C st. NW.
Falconer, B. L.	327 K st. NE.	Goodall, H. S.	2006 Fourteenth st. NW.
Fales, W. D.	915 L st. NW.	Goodwin, Eugene.	1224 Ninth st. NW.
Falls, Effie L.	913 M st. NW.	Grace, T. J.	728 Eleventh st. NE.
Farquhar, Thomas.	1060 Eighth st. NW.	Gray, G. W.	1407 New York ave. NW.
Featherstonhaugh, Thos.	109 First st. NE.	Graham, James F.	617 Second st. NE.
Feelmyer, W. M.	Oxon Hill, Md.	Graham, Neil F.	907 New York ave. NW.
Fenwick, George P.	504 Sixth st. SW.	Graham, R. H.	232 Massachusetts ave. NW.
Ferguson, T. M.	2236 Sixth st. NW.	Grandefield, Charles P.	68 C st. NW.
Fields, A. P.	Oxon Hill, Md.	Granger, W. W.	1518 Caroline st. NW.
Fields, William H.	1641 Vermont ave. NW.	Grant, John H.	Fort Myer, Va.
Filler, Charles W.	1706 Q st. NW.	Gray, W. N.	2133 P st. NW.
Finney, A. P.	926 First st. NW.	Gray, C. A.	908 N st. NW.
Fischre, G. W.	Anacostia, D. C.		
Fishblat, A. S.	809 Fourteenth st. NW.		
Fisher, Henry C.	1824 K st. NW.		
Fisher, R. C.	1628 K st. NW.		
Fitch, George W. H.	1313 M st. NW.		
Flanagan, P. R.	1124 Connecticut ave. NW.		

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1273

List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Greaves, Blanche F.....	904 Twelfth st. NW.	Herbert, J. Wells.....	205 H st. NW.
Green, W. S.....	1436 Madison st. NW.	Herbert, James W.....	808 G st. SE.
Green, S. M.....	218 Second st. NE.	Herdiska, Charles V.....	820 F st. NW.
Griffith, J. B.....	924 Twenty-third st. NW.	Herron, A. L.....	1409 East Capitol st.
Griffith, M. J.....	1405 Fifth st. NW.	Herman, Meyer.....	408 Seventh st. SW.
Griffin, Thomas.....	455 H st. NW.	Heron, George H.....	1016 Ninth st. NW.
Grinder, Geo. W.....	923 Ninth st. NW.	Heron, William H.....	1016 Ninth st. NW.
Grier, R. E.....	1507 Marion st. NW.	Hickling, D. Percy.....	221 Third st. NW.
Groot, S. J.....	924 New York ave. NW.	Hill, Richard S.....	213½ E st. NW.
Groce, H. Ripley.....	547 Florida ave. NW.	Hills, J. S.....	Freedmen's Hospital.
Groce, S. Marie.....	547 Florida ave. NW.	Hinecke, G. B.....	804 Eleventh st. NW.
Gross, Geo.....	311 East Capitol st.	Hines, J. H.....	907 M st. NW.
Grmel, Louis.....	Willard's Hotel.	Hinds, Clara Bliss.....	1531 N st. NW.
Gunnell, Francis M.....	600 Twentieth st. NW.	Hintz, Felix.....	Corner of Ninth and D sts. NE.
Guss, Harry T.....	1505 Q st. NW.	Hislop, Margaret.....	313 M st. NW.
Guzman, Horatio.....	1623 Massachusetts ave. NW.	Hodgson, Charles S.....	1302 Fourth st. NW.
Hagner, Charles E.....	1507 H st. NW.	Hodges, J. Walter.....	201 Second st. SE.
Hagner, Francis R.....	1816 H st. NW.	Hoehling, Adolph.....	1748 Q st. NW.
Hall, Arthur J.....	811 Thirteenth st. NW.	Hodge, E. D.....	1924 H st. NW.
Hall, J. A.....	3142 M st. NW.	Hoffman, William.....	1233 Massachusetts ave. NW.
Hall, Julia R.....	903 N st. NW.	Holden, Cora M.....	2811 Fourteenth st. NW.
Hall, J. M.....	1512 L st. NW.	Holden, Raymond T.....	802 Sixth st. SW.
Hamilton, John B.....	924 Seventeenth st. NW.	Holliday, F. A.....	234 F st. NW.
Hamilton, R. T.....	2236 Sixth st. NW.	Holmes, Charles.....	1737 Eleventh st. NW.
Hammett, Charles M.....	644 F st. SW.	Holbrook, Charles.....	47 Pierce st. NW.
Hammett, Charles M., jr.....	644 F st. SW.	Hooper, James L. C.....	2424 Pennsylvania ave. NW.
Hammond, Thomas V.....	1713 H st. NW.	Hood, Thomas B.....	1009 O st. NW.
Hammond, William A.....	Thirteenth and Princeton sts. NW.	Hoover, Franklin P.....	1615 Thirteenth st. NW.
Hancock, E. T.....	1333 G st. NW.	Hopkins, Charles J.....	1207 Fifth st. NW.
Hance, T. F.....	305 Massachusetts ave. NE.	Hopkins, J. Milton.....	1321 L st. NW.
Randy, William A.....	300 A st. SE.	Hord, William F., jr.....	1702 Nineteenth st. NW.
Ransom, Samuel L.....	200 D st. NW.	Hore, Cassius W.....	400 Seventh st. SW.
Ransom, Theodore.....	1310 I st. NW.	Horrigan, William D.....	2508 P st. NW.
Hardesty, J. R. L.....	1225 Fifteenth st. NW.	Hoskins, J. T.....	1352 South Capitol st.
Harding, Ralph A.....	1025 Madison st. NW.	Hotchkiss, U. S.....	23 Fifth st. SE.
Harding, Gena Russell.....	The Shoreham.	Hough, J. Spencer.....	1624 Seventh st. NW.
Harner, J. B.....	1715 Fourteenth st. NW.	Houston, Samuel.....	1410 Tenth st. NW.
Harries, William Arthur.....	1741 New Jersey ave. NW.	Housholder, A. B.....	27 Grant place NW.
Harris, E. E.....	289 Elm st. NW.	Howard, A. L.....	1126 Ninth st. NW.
Harrison, Charles S.....	1916 Eleventh st. NW.	Howard, D. C.....	2236 Sixth st. NW.
Harrison, H. A.....	Homeopathic Hospital.	Howard, James H.....	1724 Eighth st. NW.
Harrison, Isaac M.....	1424 New Jersey ave. NW.	Howard, Joseph T.....	1126 Ninth st. NW.
Harrison, George B.....	1345 F st. NW.	Howard, Joseph T. D.....	1126 Ninth st. NW.
Harrison, Julia C.....	The Cairo.	Howe, O. E.....	512 E st. NW.
Harrison, J. Stinson.....	1225 F st. NW.	Howell, Arnold G.....	244 Third st. SE.
Harrison, J. Stewart.....	Anacostia, D. C.	Howell, H. W.....	1226 Thirtieth st. NW.
Harrell, F. W.....	643 Florida ave. NW.	Howland, George T.....	1916 N st. NW.
Hart, Mar. Ester.....	1109 G st. NW.	Hubett, Wm. Wheeler.....	126 Carroll st. SE.
Hartman, Louisa.....	911 Fourth st. NW.	Hughes, William D.....	651 H st. NE.
Harding, H. T.....	1460 Kenesaw ave.	Hull, Theodore.....	1413 Fifth st. NW.
Harper, C. A.....	2032 I st. NW.	Hunt, J. R.....	933 Westminster st.
Harvey, H. M.....	610 B st. NE.	Hunt, H. J.....	116 B st. NW.
Harvey, L. A.....	1442 Seventh st. NW.	Hunt, P. C.....	2015 N st. NW.
Hasbrouck, E. M.....	905 Virginia ave. SW.	Huntton, R. J.....	1310 Q st. NW.
Haskins, H. W.....	1510 Erie st. NW.	Hutchinson, Mahlon.....	Portland Flats.
Havemer, George C.....	Anacostia, D. C.	Hyatt, Frank.....	900 K st. NW.
Hawkes, H. W.....	734 Seventeenth st. NW.	Ilman, W. H.....	1616 Vermont ave. NW.
Hawley, H. Reed.....	2520 Thirteenth st. NW.	Ingram, Thomas Darlington.	1305 H st. NW.
Haynes, H. M.....	1347 Q st. NW.	Isbell, C. A.....	1612 O st. NW.
Hayes, Henry L.....	113 First st. NE.	Isenbarg, Emanuel.....	320 Sixth st. NW.
Hayles, John R.....	807 Maryland ave. NE.	Jackson, Albert L.....	613 Second st. NW.
Hawthurst, H. H.....	1016 Fourteenth st. NE.	Jackson, Elmer E.....	192 Sixth st. NW.
Hazen, David H.....	407 Sixth st. SW.	Jackson, V. B.....	Washington Asylum Hospital.
Hazen, William P. C.....	511 East Capitol st.	Jaisohn, Philip.....	916 Fourteenth st. NW.
Heger, Anthony.....	1901 I st. NW.	Jameson, A. R.....	3069 School st. NW.
Heger, Anton, Jr.....	1900 I st. NW.	Janey, Edgar.....	12 Iowa circle.
Heiberger, Ida J.....	722 Eighteenth st. NW.	Janney, C. H.....	55 H st. NE.
Heiser, W. H.....	703 H st. NE.	Jarvis, G. L. B.....	1527 Q st. NW.
Helmuller, G. H.....	315 C st. SE.	Jenkins, F. T.....	2115 Pennsylvania ave. NW.
Helton, A. S.....	409 Fourth st. NE.	Johnson, Albert E.....	213 First st. NE.
Henderson, George.....	817 T st. NW.	Johnson, Frank G.....	215 Ninth st. SW.
Hensley, J. T.....	616 E st. NW.	Johnson, Harry A.....	1009 G st. NW.
Henion, Egbert B.....	Willard's Hotel.	Johnson, J. R.....	Home for Incurables.
Henderson, P. H.....	119 Pierce st. NW.	Johnson, H. L. E.....	1400 L st. NW.
Hepburn, J. H.....	1101 F st. NW.	Johnson, J. B.....	922 New York ave. NW.

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List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Johnson, John N.	2111 Ninth st. NW.	Latimer, C. H.	Government Hospital for the Insane.
Johnson, Joseph Taber.	1728 K st. NW.	Leadley, G. W.	24 Grant place.
Johnson, L. A.	709 C st. SW.	Leatherman, M. E.	1415 O st. NW.
Johnson, R. L.	1410 Ninth st. NW.	Leclerc, Frederick S.	1728 I st. NW.
Johnson, Wallace.	922 Seventeenth st. NW.	Lee, Fred. D.	1701 New Jersey ave. NW.
Johnson, S. L.	509 Massachusetts ave. NW.	Lee, George.	1333 Vermont ave. NW.
Johnson, R. H.	122 L st. NW.	Lee, G. H.	1311 Fourteenth st. NW.
Johnson, Lincoln.	1208 K st. NW.	Lee, T. E.	1322 Fourteenth st. NW.
Johnson, W. W.	1603 K st. NW.	Lee, A. H.	639 Pennsylvania ave. SE.
Johnston, R. B.	625 Massachusetts ave. NW.	Leech, D. Olin.	631 Maryland ave. NE.
Jolliffe, Charles C.	1005 Ninth st. NW.	Leech, George A.	2217 Thirteenth st. NW.
Jolly, Enshrod B.	1909 Vermont ave. NW.	Leech, Frank.	1715 Fourteenth st. NW.
Jones, Alvah W.	129 D st. NW.	Leepers, Matthew.	606 Eleventh st. NW.
Jones, Thomas E.	1428 M st. NW.	Leonard, Benjamin F.	918 New York ave. NW.
Jordan, Arthur.	724 Tenth st. NW.	Lewis, Duff Green.	1400 K st. NW.
Jordan, Llewellyn.	720 Fourteenth st. NW.	Lewis, S. E.	1418 Fourteenth st. NW.
Jordan, Charles L.	606 Thirteenth st. NW.	Liddell, Henry.	1344 R st. NW.
Jouy, Joseph.	2218 Pennsylvania ave. NW.	Lieber, Francis.	1322 Eighteenth st. NW.
Julihn, M. L.	200 1/2 Seventh st. SW.	Lighthill, August P.	1017 Fifteenth st. NW.
Junghans, John H.	410 D st. NE.	Lighthill, Edward B.	1017 Fifteenth st. NW.
Kalb, C. S.	Children's Hospital.	Light, A. H.	1509 Rhode Island ave. NW.
Kalbaugh, B. T.	15 Seventh st. NE.	Lincoln, N. S.	1514 H st. NW.
Kalusowski, Henry E.	911 L st. NW.	Lind, E. G., jr.	2210 M st. NW.
Kane, Joseph J.	57 H st. NW.	Little, J. J.	1511 E st. NW.
Kahys, W. H.	1334 Eighth st. NW.	Little, Joseph W.	1313 Fourteenth st. NW.
Keech, Thomas A. R.	424 East Capitol st.	Littlewood, James P.	415 B st. NE.
Keenan, John F.	923 Virginia ave. SW.	Loebboehler, George J.	95 K st. NW.
Kelley, Augustus B.	1213 L st. NW.	Long, William.	1018 Nineteenth st. NW.
Keller, John T.	808 Nineteenth st. NW.	Lopaz, A. J.	Howard University.
Kelly, Daniel J.	1635 Nineteenth st. NW.	Lopp, W. H.	23 Fifth st. NE.
Kelley, W. P.	Arlington Hotel.	Loredo, Francisco A.	1475 Kenesaw ave.
Kempler, J. Elwood.	1230 Thirtieth st. NW.	Lorini, Raphael.	813 Vermont ave. NW.
Kennedy, Charles T.	205 G st. NW.	Lothrop, E. S.	807 East Capitol st.
Leclerc, Frederick S.	1728 I st. NW.	Lovejoy, J. W. H.	900 Twelfth st. NW.
Kentz, John.	3005 P st. NW.	Lowe, H. M.	307 Elm st. NW.
Kennard, G. Howard.	Massachusetts ave. and I st. NW.	Lozier, Kate E.	1516 T st. NW.
Kerr, James.	1711 H st. NW.	Luce, Charles E.	206 B st. SE.
Ketcham, C. M.	1447 Q st. NW.	Lucy, W. A.	1213 W st. NW.
Keyes, Charles W.	817 L st. NW.	Luckett, L. F.	1419 Rhode Island ave. NW.
Kilgore, George C.	1030 North Capitol st.	Luckett, William F.	1351 Corcoran st. NW.
Kimball, Charles W.	911 Massachusetts ave. NW.	Lugenheer, French.	Langly, Va.
Kincaid, D. H.	804 Tenth st. NW.	Lunnig, T. B.	1420 K st. NW.
King, A. F. A.	1315 Massachusetts ave. NW.	McAfee, F. A.	420 Third st. NW.
King, Ernest F.	1116 M st. NW.	McArdle, Thomas E.	707 Twelfth st. NW.
King, William R.	812 Eleventh st. NW.	McBlair, J. H.	2029 I st. NW.
King, J. T.	1124 Sixth st. NW.	McConnell, James G.	609 Third st. NW.
Kinyom, J. J.	U. S. Marine-Hospital Service.	McCormack, Daniel P.	War Department.
Kingman, Richard.	711 East Capitol st.	McDonald, T. B.	1457 S st. NW.
Kinner, C. H.	1013 H st. NW.	MacDonald, Geo.	330 Pennsylvania ave. SE.
Kinnan, William A.	1936 Fifth st. NW.	McDowell, Alex. B.	1519 Rhode Island ave. NW.
Kirby, E. W.	485 Pennsylvania ave. NW.	McDuffee, J. A.	1323 L st. NW.
Kleinschmidt, C. H.	3045 N st. NW.	McGrath, B. F.	629 E st. NW.
Klocher, Charles E.	527 Eleventh st. NW.	McGuire, James C.	1527 Sixteenth st. NW.
Knapp, H. D.	Anacostia, D. C.	McKaig, J. F.	11 Sixth st. SE.
Knight, Samuel H.	514 Fifth st. NW.	McKim, Samuel A. H.	25 Fifth st. SE.
Kober, George M.	1819 Q st. NW.	McKimmie, Oscar A. M.	1333 N st. NW.
Koliphuski, Louis.	625 I st. NW.	McLain, J. S.	1924 N st. NW.
Koomes, Charles K.	635 M st. NW.	McLaughlin, Thomas N.	1226 N st. NW.
Kramer, T. B.	634 A st. SE.	McLeod, Wilfred.	Corner Frederick and Prospect sts.
Krogstad, Henry.	915 Sixteenth st. NW.	McLaughlin, G. N.	903 Tenth st. NW.
Kurtz, John.	3142 P st. NW.	McMann, Geo. R.	3330 Prospect ave. NW.
LaFetra, G. H.	606 Ninth st. NW.	McMaster, A. McF.	Ohio National Bank Building.
LaFetra, L. E.	1321 H st. NW.	McMillan, S. M.	Riverdale, Md.
Lamb, D. S.	800 Tenth st. NW.	McNally, V.	Hamilton House.
Lamb, John Melvin.	910 T st. NW.	MacNeil, J. E.	1415 Columbia st.
Landers, Thomas.	1022 Eighth st. NW.	McNeil, E. K.	930 K st. NW.
Lane, D. A.	227 O st. NW.	McPherson, D. M.	1822 Fifteenth st. NW.
Lang, J. H.	718 Tenth st. NW.	McWilliams, A.	461 Missouri ave.
Lang, Charles J.	718 Tenth st. NW.	Macdonald, A. L.	629 East Ave.
Lancy, F. P.	1312 Eleventh st. NW.	Macdonald, T. L.	226 Eighth st. SW.
Lassiter, William L.	1712 P st. NW.	Machinek, Camillo H.	1118 New York ave. NW.
Latimer, George.	1326 New York ave. NW.		

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1275

List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Mackall, James McV.....	1207 Thirty-first st. NW.	Mohun, T. B.....	1005 H st. NW.
Mackall, Louis.....	3040 Dumbarton ave. NW.	Montgomery, W. S.....	1912 Eleventh st. NW.
Mackall, Louis, jr.....	3040 Dumbarton ave. NW.	Moncre, J. A.....	1124 Connecticut ave. NW.
Mackey, Argyle.....	722 H st. NE.	Moore, Mark W.....	1203 North Capitol st. NW.
Maddox, A. S.....	714 Tenth st. NW.	Moore, J. H.....	728 Seventeenth st. NW.
Maddox, William J.....	921 Second st. NE.	Moore, V. A.....	1133 Thirteenth st. NW.
Maddox, William R.....	2139 Pennsylvania ave. NW.	Moore, H. R.....	1734 F st. NW.
Madison, Benj. F.....	417 B st. SE.	Moran, John F.....	2420 Pennsylvania ave. NW.
Magruder, Geo. L.....	815 Vermont ave.	Morgan, Edwin Lee.....	1919 Pennsylvania ave. NW.
Magnus, Frank D.....	802 F st. NW.	Morgan, Francis B.....	1328 Ninth st. NW.
Mallam, Charles E.....	1231 New York ave. NW.	Morgan, J. Dandley.....	907 E st. NW.
Mallam, Thomas F.....	117 B st. SE.	Morgan, J. W.....	1914 Thirteenth st. NW.
Maloney, James A.....	1424 Q st. NW.	Morris, A. W.....	1714 Massachusetts ave. NW.
Mannakee, E. O.....	1626 Nineteenth st. NW.	Morris, G. G.....	1407 New York ave. NW.
Manning, William P.....	2002 Fourteenth st. NW.	Morris, Lawrence H.....	2126 Fourteenth st. NW.
Marble, Ella M. S.....	116 New York ave. NW.	Morrison, Mary E.....	533 Florida ave. NW.
Marbury, Chas. C.....	Providence Hospital.	Morrison, J.....	116 Massachusetts ave. NE.
Markriter, John J.....	705 Sixth st. NW.	Morrow, Chas. E.....	1510 H st., N. W.
Marmion, William V.....	1108 F st. NW.	Morse, Ed. E.....	811 Ninth st. NW.
Marrow, C. E.....	1510 H st. NW.	Morsell, Wm. F.....	1610 Thirteenth st. NW.
Marr, Samuel S.....	1415 Tenth st. N. W.	Mort, Paulus.....	Howard University.
Marshall, Charles H.....	2712 P st. NW.	Moss, E. E.....	Garfield Hospital.
Marshall, Collins.....	1010 Eleventh st. NW.	Mudd, Joseph A.....	161 Massachusetts ave. NE.
Marsteller, A. A.....	304 C st. NW.	Mudd, T. D.....	107 Harrison st., Anacostia, D. C.
Martin, Thomas.....	310 New York ave. NW.	Muhlman, Samuel A.....	808 New Jersey ave. NW.
Materson, Wm. L.....	14 1st. NE.	Muller, Max.....	1027 Ninth st. NW.
Mason, Wm. C.....	801 L st. NW.	Muncaster, Magruder.....	1510 H st. NW.
Mason, R. F.....	3 Cook Row (Georgetown).	Muncaster, S. B.....	1510 H st. NW.
Matthews, Washington.....	1262 New Hampshire ave. NW.	Muncaster, Otto M.....	1811 H st. NW.
Mattingly, W. H.....	330 Spruce st.	Mundell, John H.....	1022 Eighteenth st. NW.
Maus, R. T.....	1701 Sixth st. NW.	Munson, Reginald.....	3101 P st. NW.
Maxwell, Charles D.....	1716 1st. NW.	Murphy, F. G.....	817 T st. NW.
Maxey, F. E.....	18 Iowa Circle.	Murray, T. M.....	730 Seventeenth st. NW.
Mayfield, Clifton.....	1335 Thirtieth st. NW.	Murrell, Edward.....	1700 Nineteenth st. NW.
May, Henry C.....	1826 Ninth st. NW.	Myers, R. M.....	2015 I st. NW.
May, R. D.....	3102 N st. NW.	Napper, W. P.....	1915 Eleventh st. NW.
Mazzei, F. A.....	216 Arthur Place NW.	Nash, Francis Smith.....	909 Sixteenth st. NW.
Mead, Theodore.....	902 Twenty-second st. NW.	Nason, W. P.....	1915 Eleventh st. NW.
Means, Samuel R.....	Government Hospital for the Insane.	Neale, Richard A.....	1801 Pennsylvania ave. NW.
Medford, Homer S.....	Stibley Hospital.	Neall, John H.....	1603 Seventh st. NW.
Melvin, McCarty B.....	814 Four-and-a-half st. SW.	Neely, John R.....	205 First st. SE.
Menocal, O. A.....	1132 Connecticut ave. NW.	Nelson, J. Edward.....	451 M st. NW.
Meredith, J. C.....	1710 F st. NW.	Nelson, A. J.....	917 O st. NW.
Merriam, Arthur C.....	1201 New Jersey ave. NW.	Nesmith, F. M.....	1816 Jefferson place.
Metzerott, John H.....	Garfield Hospital.	Nevitt, J. R.....	310 Indiana ave. NW.
Middleton, Rozier.....	1212 Ninth st. NW.	Newman, Henry M.....	2403 Pennsylvania ave. NW.
Miller, A. C.....	933 New Jersey ave. NW.	Newlon, S. C.....	1344 G st. NW.
Miller, H. C.....	702 Tenth st. N. W.	Newell, W. S.....	626 C st. NE.
Miller, Morris E.....	1339 Fifteenth st. NW.	Newton, Lewis E.....	403 L st. NW.
Miller, Thomas.....	1610 Seventh st. NW.	Nice, Henry.....	513 Tenth st. SE.
Miller, S. E.....	1324 New York ave. NW.	Nicholson, Leonard S.....	1311 H st. NW.
Millin, William I.....	410 K st. NW.	Nichols, J. Ben.....	1133 Thirteenth st. NW.
Minor, Michael.....	715 Eighth st. SW.	Noble, P. H. C.....	1715 Ninth st. NW.
Minor, Charles L.....	1328 New York ave. NW.	Noble, P. H. G.....	1715 Ninth st. NW.
Miner, Francis H.....	151 A st. NE.	Norcom, Henderson S.....	151 C st. NE.
Mischeaux, Paul J.....	913 E st. SW.	Nordhoff, Sofie.....	1404 L st. NW.
Mitchell, A. T.....	815 Vermont ave. NW.	Norman, Francis.....	333 Spruce st.
Mitchell, A. B.....	1908 Sunderland place.	Norris, Phoebe R.....	708 Tenth st. NW.
Mitchell, J. W.....	907 M st. NW.	Norton, C. A.....	925 Eighth st. NW.
Mitchell, J. W. F.....	Freedmen's Hospital.	Norton, Thomas M.....	2033 H st. NW.
Mitchell, R. R.....	505 Thirteenth st. NW.	Norton, Rupert.....	1412 I st. NW.
Moffatt, Samuel S.....	719 Eleventh st. NW.	Norwood, J. C.....	Superior st., near Sixteenth.
Moffatt, M. M.....	127 B st. SE.	Nourse, Henry D.....	2823 H st. NW.
		Nuckold, C. L.....	906 Eighth st. SE.
		O'Conner, Charles E.....	815 Ninth st. NW.
		O'Brien, Emilie Young.....	1307 N st. NW.
		Ober, Geo. C.....	210 B st. SE.

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List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Oertel, T. E.	1145 Twenty-first st. N.W.	Quay, J. B.	627 Second st. N.E.
Ogden, David M.	1232 Ninth st. N.W.	Quick, Tunis C.	225 E st. N.E.
Okie, William T.	1331 F st. N.W.	Quivey, W. L.	715 Fourteenth st. N.W.
O'Reilly, R. M.	1825 Q st. N.W.	Radcliffe, Samuel J.	1523 K st. N.W.
O'Reilly, Thomas	11 M st. N.W.	Rand, Irving W.	1444 Corcoran st. N.W.
Orlenan, Daisy M.	742 Fifth st. N.W.	Ransom, S. A.	72 M st. N.W.
Osborne, William N.	627 G st. S.E.	Raub, J. F.	405 Second st. S.E.
Osumu, L. C.	1161 First st. N.W.	Rautenberg, A. C.	510 Fifth st. N.W.
Outlaw, John S.	1810 Tenth st. N.W.	Rautenberg, Lewis E.	510 Fifth st. N.W.
Parcel William G.	813 Fifth st. N.W.	Raud, C. F.	1228 Fifteenth st. N.W.
Park, Francis E.	715 S st. N.W.	Ravenberg, Rudolph	1446 Pierce st. N.W.
Parker, E. M.	1412 I st. N.W.	Ray, Anthony M.	1220 S st. N.W.
Parker, J. M.	512 Eighth st. S.E.	Raymond, J. U.	526 Third st. N.E.
Parkinson, R. A.	2120 Brightwood ave.	Recher, Philip	902 O st. N.W.
Parsons, Alfred B.	Takoma, D. C.	Reed, Elizabeth	Nineteenth and C sts. S.E.
Parsons, Mary A.	1216 H st. N.W.	Reed, J. O.	1226 F st. N.W.
Parsons, Starr	306 C st. N.E.	Reid, Lorin W.	425 M st. N.E.
Parrott, R. L.	1916 Eleventh st. N.W.	Reid, J. L.	3122 N st. N.W.
Patterson, A. C.	Government Hospital for the Insane.	Reilly, James R.	221 Four-and-a-half st. S.W.
Payne, Abbott S.	703 Fifteenth st. N.W.	Reinhardt, Otto M.	509 Fourth st. S.E.
Pearman, Sylvian.	633 East Capitol st.	Reisinger, E. M.	1209 Thirteenth st. N.W.
Pence, C. W.	124 C st. N.W.	Rench, Victor B.	717 Ninth st. N.W.
Pence, N. W.	913 Eighth st. N.W.	Repetti, F. F.	64 I st. N.W.
Penrod, Hyman J.	Brookland, D. C.	Resh, D. M.	211 Pennsylvania ave. N.W.
Penny, E. A.	1736 K st. N.W.	Reyburn, Eugenia	2129 F st. N.W.
Penny, H. T.	1016 Tenth st. N.W.	Reyburn, Robert	2129 F st. N.W.
Percy, W. T.	U. S. Naval Hospital.	Reyburn Robert, jr.	714 Thirteenth st. N.W.
Perry, Geo. N.	1524 Fourteenth st. N.W.	Reyburn, Ella Frances.	2129 F st. N.W.
Perkins, Edward D.	416 Tenth st. S.W.	Ribble, G. T.	523 Spruce st. N.W.
Peter, Armistead.	3044 O st. N.W.	Richards, Nancy D.	1404 I st. N.W.
Peterson, B. H.	1523 Vermont ave.	Richards, T. W.	Garfield Hospital.
Pettigrew, Charles V.	1822 Twelfth st. N.W.	Richardson, Charles W.	1106 L st. N.W.
Pettigrew, Augusta M.	520 Eighth st. N.E.	Richardson, E. E.	400 Seventh st. S.W.
Phelps, W. P.	804 I st. N.W.	Richardson, G. A.	Hyattsville, Md.
Phelps, William P.	1227 D st. N.W.	Richardson, J. J.	1017 Fourteenth st. N.W.
Phillips, W. T. R.	1013 N st. N.W.	Rishey, S. O.	732 Seventeenth st. N.W.
Phillips, F. M.	1507 P st. N.W.	Rieh, F. R.	1245 Thirty-first st. N.W.
Pickleger, John W.	1528 Ninth st. N.W.	Richmond, Paul.	2201 Fourteenth st. N.W.
Pickford, Edward F.	719 A st. N.E.	Richardson, S. H.	2420 Seventh st. N.W.
Pierre, S. M.	718 Twenty-third st. N.W.	Riddell, P. S.	Central National Bank.
Pile, Mayne M.	1230 Fourteenth st. N.W.	Riegel, William A. L.	1333 G st. N.W.
Pinchback, B. R.	1117 Nineteenth st. N.W.	Riggs, Daniel H.	1410 Eleventh st. N.W.
Pinhard, H. M.	1314 Fourth st. N.W.	Riley, T. C.	633 B st. S.W.
Pitsnogle, J. E.	405 Seventh st. N.W.	Rindlaub, J. H.	2032 I st. N.W.
Poey, Edwardo Carlos.	1225 Connecticut ave. N.W.	Ritchie, Louis W.	3259 N st. N.W.
Poole, Benj. G.	945 Rhode Island ave. N.W.	Rixey, P. M.	1707 New York ave.
Pope, Gustavus W.	1109 Fourteenth st. N.W.	Robbins, Henry A.	1750 M st. N.W.
Porter, H. W.	312 Indiana ave. N.W.	Robbins, A. J.	16 Third st. N.E.
Porter, Henry N.	Cor. Third and Spruce sts. N.W.	Roberts, E. E.	702 North Carolina ave. S.E.
Porter, Henry C.	3035 O st. N.W.	Roberts, C. Wesley	1007 H st. N.W.
Porter, H. R.	1912 Harewood ave.	Roberts, Palmer W.	702 North Carolina ave. S.E.
Portman, Adeline E.	722 Eighteenth st. N.W.	Roberts, Robert R.	1225 F st. N.W.
Posey, Cataldus H.	1327 G st. N.W.	Roberts, William.	Fort Myer, Va.
Postley, Charles E.	1429 Eleventh st. N.W.	Robinson, Thomas.	1415 P st. N.W.
Pospisiel, Jos.	1124 Twelfth st. N.E.	Rollins, N. W.	2210 M st. N.W.
Potter, Margaret S.	507 B st. N.E.	Roman, F. O.	1501 Eighth st. N.W.
Poulton, William E.	426 Four-and-a-half st. S.W.	Rory, R. F.	456 C st. N.W.
Pratt, Daniel M.	318 Indiana ave. N.W.	Rosse, Irving C.	1732 H st. N.W.
Prentiss, Daniel W.	1101 Fourteenth st. N.W.	Ronsh, Sigel.	1103 H st. N.W.
Prewitt, Geo. D.	127 E st. N.W.	Rowland, John A.	600 Sixth st. N.W.
Price, J. P.	602 H st. N.E.	Roy, Philip S.	1 L st. N.W.
Price, W. K.	1124 Twenty-third st. N.W.	Ruffin, Sterling.	809 Twelfth st. N.W.
Probert, C. G.	930 K st. N.W.	Russell, H. C.	1815 H st. N.W.
Pugh, Whitman H.	1625 Fourteenth st. N.W.	Russell, Charles F.	123 B st. S.E.
Purdey, O. A.	702 Fifth st. N.W.	Rutherford, J. B.	238 New Jersey ave. N.W.
Purman, J. J.	1435 Chapin st. N.W.	Ryan, H. E.	523 Third st. N.W.
Purman, L. C.	1723 Fifth st. N.W.	Saffold, James P.	1604 Eighth st. N.W.
Purnell, W. W.	1036 Third st. N.W.	St. Clair, F. A.	1525 Fourteenth st. N.W.
Purvis, Charles B.	1118 Thirteenth st. N.W.	Sampson, Geo. C.	2423 Pennsylvania ave. N.W.
Pyles, H. V.	Anacostia, D. C.	Sanford, J. L.	316 Third st. S.E.
Pyles, Richard A.	Anacostia, D. C.	Sawyer, J. Frank.	601 P st. N.W.
Quackenbush, L. R.	321 Pennsylvania ave. N.W.	Schaeffer, Edward M.	1512 Q st. N.W.
		Schelskohn, O. W.	500 Eleventh st. S.E.
		Schricker, Walter F.	401 Seventh st. N.W.
		Scholl, Joseph	615 D st. N.W.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1277

List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Scott, Edward D.....	1444 Pierce place.	Stone, T. Richie.....	1630 Rhode Island ave.
Scott, James Foster.....	1311 Connecticut ave.		NW.
	NW.	Stone, I. S.....	1449 Rhode Island ave.
Scott, W. K.....	511 E st. SE.		NW.
Scott, Douglas G.....	1410 Twelfth st. NW.	Stone, James H.....	1309 H st. NW.
Seibert, E. G.....	24 Grant place NW.	Stone, J. Hamilton.....	Brightwood, D. C.
Sellhausen, Ernest A.....	640 G st. NW.	Storch, A. B.....	142 E st. NE.
Sewell, Charles A.....	1133 Twentieth st. NW.	Stoutenburgh, John A.....	1326 New York ave.
Sisford, Jos. F. S.....	2131 K st. NW.		NW.
Shade, N. B.....	929 H st. NW.	Story, James J.....	1353 Maryland av. NE.
Shauld, F. J.....	901 R st. NW.	Stowell, Charles H.....	1326 New York ave.
Shands, A. R.....	1305 H st. NW.		NW.
Shannon, W. C.....	1814 G st. NW.	Stratton, William C.....	1422 K st. NW.
Shaw, J. W.....	908 Fifteenth st. NW.	Street, Daniel B.....	1102 Ninth st. NW.
Shearer, Juliet G.....	1216 R st. NW.	Street, H. R.....	602 B st. NE.
Shepard, J. B.....	1613 Madison st. NW.	Strickler, M. B.....	512 East Capitol st.
Shekell, Abraham B.....	1529 Thirty-second st.	Stuart, James.....	1523 Fourteenth st. NW
	NW.	Stuart, J. Rhett.....	7 Dupont circle.
Shelley, Albert.....	719 Ninth st. NE.	Suddarth, James L.....	821 North Capitol st.
Shiland, James L.....	211 New Jersey ave.	Suddler, Thomas.....	206 Elm st. NW.
	NW.	Sumner, Jeannette J.....	1730 H st. NW.
Shiner, R. L.....	900 Pennsylvania ave.	Sullivan, W. L.....	731 Sixth st. NE.
	SE.	Sutherland, Joseph H.....	247 North Capitol st.
Shirley, John J.....	1534 Eleventh st. NW.	Suter, Henderson.....	1252 Thirty first st. NW.
Shorp, Jesse.....	312 Indiana ave. NW.	Sutliff, Milo H.....	1014 K st. NW.
Shorb, E. F.....	1124 Fifth st. NW.	Sutton, L. J.....	Brookland, D. C.
Shrader, H. D.....	804 Ninth st. NW.	Swartwout, F. A.....	209 Ninth st. SW.
Shute, D. Kerfoot.....	1321 Q st. NW.	Swain, O. A. T.....	604 Massachusetts ave.
Sillers, Robert Fry.....	313 H st. NW.		NW.
Simmons, Sherod S.....	2358 Sixth st. NW.	Swett, Fred. Kimball.....	934 French st. NW.
Simpson, Edward P.....	719 Ninth st. NE.	Swormstedt, Lyman H.....	1435 Fourteenth st. NW.
Simpson, J. C.....	Government Hospital	Talbott, H. T.....	101 Second st. NW.
	for the Insane.	Tancil, Arthur W.....	2111 Pennsylvania ave.
Slaymaker, E. W.....	Tenley, D. C.		NW.
Slattery, J. J.....	252 Eleventh st. SE.	Tarkington, Joseph A.....	217 D st. NW.
Smith, P. M.....	Emergency Hospital.	Taylor, A. H.....	485 H st. SW.
Smith, Hugh M.....	1248 New Jersey ave.	Taylor, T. Archibald.....	Corner Third and Mas-
	NW.		sachusetts ave. NE.
Smith, E. G.....	313 Massachusetts ave.	Taylor, Susan M.....	325 C st. SE.
	NE.	Taylor, Thomas.....	238 Massachusetts ave.
Smith, Julia E.....	1100 M st. NW.		NE.
Smith, J. J.....	454 Maryland ave. SW.	Taylor, William H.....	2232 Sixth st. NW.
Smith, Thomas S.....	1837 Vermont ave. NW.	Telft, F. O.....	1616 Seventh st. NW.
Smith, Thomas C.....	1133 Twelfth st. NW.	Test, Frederick C.....	901 M st. NW.
Smith, Percy G.....	Children's Hospital.	Tennent, Edward S.....	938 P street NW.
Smith, L. J.....	3230 N st. NW.	Theel, Thomas.....	1014 Fifteenth st. NW.
Snowden, Arthur A.....	1272 New Hampshire	Thomas, Carrie H.....	448 O st. NW.
	ave.	Thomas, Ada R.....	1233 Massachusetts ave.
Snyder, Arthur.....	3051 N st. NW.		NW.
Solon, Frederick.....	512 I st. NW.	Thomas, John D.....	1400 K st. NW.
Sonnenschildt, Chas. W.....	1307 H st. NW.	Thompson, Ashley.....	221 B st. NW.
Sotheron, Elmer.....	1921 I st. NW.	Thompson, J. Ford.....	804 Seventeenth st. NW.
Sotheron, James T.....	1919 I st. NW.	Thomson, Wesley D.....	1504 Sixth st. NW.
Southworth, R. J.....	1220 Thirty-sixth st.	Thompson, Millard F.....	473 Maryland ave. SW.
	NW.	Thompson, John S.....	Washington Asylum.
Sowers, Z. T.....	1320 New York ave.	Thomson, William J. R.....	61 New York ave. NE.
	NW.	Tompkins, Edmund Lee.....	1334 Connecticut ave.
Spackman, Mary D.....	1634 Sixteenth st. NW.		NW.
Spague, J. T.....	1926 I st. NW.	Toner, Joseph M.....	1445 Massachusetts ave.
Spelz, William M.....	1023 Vermont ave. NW.		NW.
Squire, L. T.....	9 K st. NE.	Town, H. S.....	951 New York ave. NW.
Stack, Morris J.....	Government Hospital	Townshend, Smith.....	408 Sixth st. NW.
	for the Insane.	Towle, P. S.....	522 Twenty-first st. NW.
Stafford, John J.....	467 F st. SW.	Trott, Thomas H.....	911 C st. NE.
Stafford, C. S.....	222 Third st. NW.	Trudgian, Josiah B.....	314 Massachusetts ave.
Stanford, J. Thomas.....	1728 Tenth st. NW.		NE.
Stanford, Flora H.....	411 H st. NE.	Tucker, William P.....	1625 Fourteenth st. NW.
Stavely, A. L.....	Garfield Hospital.	Tucker, R. D.....	804 Eleventh st. NW.
Stems, J. S.....	1425 Rhode Island ave.	Turner, T. J.....	1707 New York ave.
	NW.		NW.
Sterns, S. S.....	1425 Rhode Island ave.	Tyler, Abbie C.....	401 Third st. NW.
	NW.	Tyler, W. A.....	616 C st. SE.
Stevens, A. H.....	Anacostia, D. C.	Upshaw, T. L.....	1901 Eleventh st. NW.
Stevens, Edward.....	1300 Rhode Island ave.	Upham, William C.....	1539 T st. NW.
	NW.	Urie, Wm. A.....	1006 I st. NW.
Stevens, Henry C.....	224 D st. NW.	Vale, F. P.....	1324 L st. NW.
Stevenson, Joseph G.....	1007 F st. SW.	Van Ness, Mary R.....	1201 F st. NW.
Stevenson, G. E.....	1143 New Hampshire	Van Rensselaer, John.....	2 Thomas circle NW.
	ave. NW.	Vassili, John.....	1333 G st. NW.
Stewart, William J. S.....	U. S. Marine-Hospital	Vaughn, George T.....	518 B st. NE.
	Service.	Verdi, Tullis S.....	815 Fourteenth st. NW.
Stone, Charles G.....	Brightwood, D. C.	Vincent H. D.....	618 C st. SE.

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List of registered physicians practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Vincent, Thomas N	1221 N st. NW.	Whitney, Walter	1403 H st. NW.
Voss, Otto	711 Eleventh st. NW.	White, James	Brightwood, D. C.
Wagner, George H.	120 F st. NE.	Williams, Frank H.	1519 K st. NW.
Wagner, William F.	Children's Hospital.	Wilder, James R.	412 B st. SE.
Wagner, R. S.	Children's Hospital.	Williams, D. H.	Freedmen's Hospital.
Wales, Philip S.	825 Vermont ave. NW.	Wilkinson, E. M.	513 Thirteenth st. NW.
Walker, Allen	Brightwood, D. C.	Williams, J. B., jr.	Brookland, D. C.
Walker, R. A.	1411 Pennsylvania ave. NW.	Williams, Green	1463 Pierce place.
Wallace, C. Jacques	527 Eleventh st. NW.	Williston, E. D.	1831 Fourteenth st. NW.
Walls, George	919 New York ave. NW.	Wilkinson, A. D.	455 Massachusetts ave. NW.
Walsh, John E.	2 Sixth st. NE.	Wilmer, Wm. Holland ..	715 Fourteenth st. NW.
Walsh, Ralph	1504 H st. NW.	Wilson, Anne	1451 Rhode Island ave.
Walter, John	1010 F st. NW.	Wilson, J. S.	1242 Twentieth st. NW.
Walter, Leroy D.	642 Fifteenth st. NE.	Wilson, L. D.	21 Third st. NE.
Walter, William F.	487 H st. SW.	Wimberly, W. W.	922 Twenty-third st. NW.
Walton, Joseph R.	1921 Pennsylvania ave. NW.	Winslow, Caroline B.	1 Grant place.
Ward, William W.	2029 H st. NW.	Winter, Eugene C. C.	815 Four-and-a-half st SW.
Ward, Samuel A.	927 N st. NW.	Winter, John T.	1528 Ninth st. NW.
Waring, J. H. N.	1932 Eleventh st. NW.	Wirt, William D.	459 G st. NW.
Warfield, W. A.	1311 Third st. NW.	Wise, Thomas W.	1316 Q st. NW.
Warman, W. M. II.	939 T st. NW.	Wise, J. C.	Navy-Yard.
Warren, G. W.	810 Thirteenth st. NE.	Witmer, A. M.	Government Hospital for the Insane.
Washburn, William S.	1133 Thirteenth st. NW.	Witman, O. H.	1234 Thirteenth st. NW.
Washington, Richard ..	828 Twelfth st. NW.	Wolhaupter, David P.	801 H st. NW.
Watson, James A.	Anacostia, D. C.	Wood, G. W.	1410 Thirty-fifth st. NW.
Watkins, S. E.	1213 N st. NW.	Wood, L.	2000 R st. NW.
Watkins, Victor E.	1506 Fifteenth st. NW.	Woodman, Francis J.	634 A st. NE.
Watts, S. Roger	1808 M st. NW.	Woodson, L. Clay	204 G st. NW.
Weaver, C. A.	1614 Q st. NW.	Woode, C. H.	Howard University.
Webb, E. Douglass	1228 Fourteenth st. NW.	Woodward, H. Wells ..	802 K st. NW.
Webb, Frank J.	2234 Sixth st. NW.	Woodward, William C.	Health Officer, 508 1 st. NW.
Wehrle, Gottlieb	1941 Vermont ave. NW.	Wooster, Mary L.	2020 Fourteenth st. NW.
Weller, J. R.	1912 Eleventh st. NW.	Wornaley, Joseph A.	506 P st. NW.
Wellington, J. R.	Children's Hospital.	Wright, G. H.	1302 R st. NW.
Wells, C. A.	Hyattsville, Md.	Wright, B. L.	420 N st. NW.
Wells, H. M.	1707 New York ave. NW.	Wright, W. R.	507 O st. NW.
Wells, Walter A.	Washington Asylum.	Yarnall, John	3120 N st. NW.
Werber, G. E.	1408 Corcoran st. NW.	Yarrow, H. C.	814 Seventeenth st. NW.
Werthebaker, C. I.	705 Q st. NW.	York, Margaret M.	925 O st. NW.
Werner, Philip P.	608 Massachusetts ave. NE.	Young, Ed. R.	915 E st. NW.
West, Charles T.	602 K st. NW.	Young, Charles L.	415 Sixth st. NW.
West, George W.	1102 Fourteenth st. NW.	Young, G. B.	Cedar st., Mount Pleas- ant.
West, Theodore S.	604 H st. NW.	Young, James T.	1336 New York ave.
Westlake, J. A.	1125 Tenth st. NW.	Young, Parke G.	1317 Eighth st. NW.
Weston, Edward	1609 Thirteenth st. NW.	Zimmerman, Chas. St. V.	423 French st. NW.
White, C. H.	1707 New York ave. NW.		

Register of dentists practicing in the District of Columbia.

Abraham, W. W.	1204 G st. NW.	Billopp, J. S.	Fourth and East Capiti- ol st.
Aguilera, Fernando	913 New York ave. NW.	Blair, Edmund C.	212 Indiana ave. NW.
Alderman, Z. W.	639 Pennsylvania ave. SE.	Bliss, E. D.	1311 F st. NW.
Allen, A. K.	Seventh and D sts. NE.	Blackiston, T. C.	1011 Seventh st. NW.
Allen, H. J.	1327 Fifth st. NW.	Bohrer, W. O.	508 F st. NW.
Anderson, Charles F.	1504 H st. NW.	Bradley, W. E.	730 Ninth st. NE.
Angar, Mary M.	1734 Fourteenth st. NW.	Brightwell, O. H.	1227 Pennsylvania ave. NW.
Appler, Charles W.	2106 H st. NW.	Brightwell, F. B.	414 Eleventh st. NW.
Ashworth, Edmund P.	1116 G st. NW.	Brown, M. S.	725 Fourteenth st. NW.
Ash, William M.	473 Florida ave. NW.	Brown, G. R.	1405 New York ave. NW.
Babcock, Barney	911 Fourth st. NW.	Brown, A. J.	1329 G st. NW.
Baker, Arthur A.	Corner Seventeenth st. and Howard ave.	Brown, Joseph F.	2327 Pennsylvania ave. NW.
Barnes, Walter S.	111 Sixth st. SE.	Brown, Oscar B.	1108 F st. NW.
Baldwin, C. S. W.	Seventh and D sts. NW.	Bryant, E. A.	1342 New York ave. NW.
Bates, Robert A.	1426 New York ave. NW.	Buckley, C. M.	1314 F st. NW.
Bockett, George M.	817 T st. NW.	Burch, John H.	619 Twenty-second st. NW.
Beatty, Chester Hopkins	610 East Capitol st.	Burton, Irwin G.	924 New York ave. NW.
Bentley, Henry	401 Seventh st. NW.	Cady, E. E.	401 Seventh st. NW.
Benson, J. Hepburn	1107 Ninth st. NW.	Carey, John J.	2110 Fourteenth st. NW.
Berkley, W. M.	127 Indiana ave. NW.	Carroll, E. S.	1314 F st. NW.
Berry, John R.	611 Seventh st. NW.		
Best, A. O.	612 Thirteenth st. NW.		

Register of dentists practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Caton, Ransom L.	717 Eleventh st. NW.	Hodgkin, F. C.	923 Flint st. NW.
Cannon, Will C.	802 F st. NW.	Howard, Edwin	1116 F st. NW.
Casson, Stephen B.	635 M st. NW.	Hodges, W. W.	1940 Fourteenth st. NW.
Calbert, F. H.	1415 N st. NW.	Hugo, L. F. C.	1111 Pennsylvania ave. NW.
Calver, J. V.	207 A st. SE.	Hunt, W. M.	627 Pennsylvania ave. NW.
Church, John W.	401 Seventh st. NW.	Hutchinson, H. B.	473 Pennsylvania ave. NW.
Chase, Jerome	1313 New York ave. NW.	Hunter, J. H.	940 E st. NW.
Clark, E. A.	1756 M st. NW.	Hunt, R. F.	520 Thirtieth st. NW.
Clark, W. L.	1341 F st. NW.	Ingalls, J. E. N.	1422 Ninth st. NW.
Charles, F. M.	704 Q st. NW.	James, H. C.	637 Q st. NW.
Cokerille, R. H.	1426 New York ave. NW.	Jewell, Edith	1328 Tenth st. NW.
Cokerille, Harry	1338 New York ave. NW.	Johnston, B. B.	400 East Capitol st.
Cokerille, S. J.	1338 New York ave. NW.	Johnson, A. S.	603 P st. NW.
Cokerille, S. J., jr.	1338 New York ave. NW.	Jones, Thomas J.	3105 M st. NW.
Coby, A. D.	1117 G st. NW.	Kappeler, Jessie	1311 L st. NW.
Creamer, William	1514 F st. NW.	Kean, J. E.	1323 G st. NW.
Cronin, R. V.	439 G st. NW.	King, H. L.	1321 F st. NW.
Crowther, L.	717 Fourteenth st. NW.	Knight, D. O.	711 Eleventh st. NW.
Daly, F. F.	716 Four-and-a-half st. SW.	Knoles, H.	1959 Third st. NW.
Daly, W. B.	81 H st. NW.	Ladson, C. J.	1907 Pennsylvania ave. NW.
Daly, J. A.	Corner Eleventh and F sts. NW.	Lattimer, C. W. H.	1403 New York ave. NW.
Davis, S. G.	619 K st. NW.	Lawrence, W. H.	1116 F st. NW.
Davis, C. R.	1108 New York ave. NW.	Lewis, J. Hall	1309 F st. NW.
Davis, J. W.	804 Ninth st. NW.	Lee, A. H.	639 Pennsylvania ave. SE.
Davis, L. F.	1108 New York ave. NW.	Lee, T. E.	1322 Fourteenth st. NW.
Davis, H. P.	1613 Nineteenth st. NW.	Liggett, H. P.	609 Thirtieth st. NW.
Daws, R. M.	520 Thirtieth st. NW.	Linsey, Charles P.	1209 Thirty-first st. NW.
Darling, B. F.	613 F st. NW.	Louis, P. C.	2100 Vermont ave. NW.
Barrell, O. D.	1324 New York ave. NW.	Low, W. A.	17 Fifth st. SE.
Diedel, C.	535 Eleventh st. NW.	Loften, William S.	1543 M st. NW.
Diedelacker, W. E.	931 New York ave. NW.	Lockerman, Thomas G.	3226 M st. NW.
Donaldson, R. B.	1309 F st. NW.	Lyon, W. A.	1344 G st. NW.
Donaldson, H. A.	1309 F st. NW.	McAfee, J. A.	1108 North Capitol st. NW.
Donnelly, William	1022 Fourteenth st. NW.	McConnell, A. E.	1211 F st. NW.
Dufour, J. F. R.	604 Tenth st. NW.	McFarlan, Daniel	1340 New York ave. NW.
Egleston, G. W.	700 Tenth st. NW.	McNaughton, C. W.	603 Thirtieth st. NW.
Elliott, W. S. G.	1309 Connecticut ave. NW.	McLean, J. A.	720 Fourteenth st. NW.
Ermer, John C.	1418 Fourteenth st. NW.	MacDonald, J. E.	938 F st. NW.
Estlin, B. J.	939 Pennsylvania ave. NW.	MacNamee, Herbert	1321 G st. NW.
Engster, L. W.	525 Thirtieth st. NW.	Madert, J. H.	1322 Kenyon st. NW.
Evans, W. W.	1756 M st. NW.	Mason, S. T.	1201 Pennsylvania ave. NW.
Finley, M. F.	1928 I st. NW.	Marstellar, A. A.	432 Fourth st. NW.
Fowler, J. E.	716 Four-and-a-half st. SW.	Magnus, F. D.	127 C st. NE.
Galloway, J. H.	208 Indiana ave. NW.	Merrill, William	710 Eleventh st. NW.
Gartrell, J.	211 Four-and-a-half st. NW.	Mihollen, W. K.	606 Eleventh st. NW.
Gerow, E. K.	717 Eleventh st. NW.	Mitchell, John W.	114 Monroe st., Anacostia.
Gerry, G. A.	401 Seventh st. NW.	Moore, H. B.	1402 W st. NW.
Goldthwait, G. N.	1504 H st. NW.	Morrow, T. G.	631 F st. SW.
Goodno, B. H.	500 N st. SE.	Monroe, W. D.	3133 N st. NW.
Graham, C. C.	307 Seventh st. NW.	Moyer, Nora	109 Eighth st. NE.
Gunnell, R. H.	627 Pennsylvania ave. NW.	Munson, C. B.	1324 New York ave. NW.
Guoshon, M. B.	1508 Fourteenth st. NW.	Murray, H. T.	1221 G st. NW.
Gustin, W. S.	940 New York ave. NW.	Muzzy, A. M.	1715 Fourteenth st. NW.
Gutelines, Frid. E.	630 G st. NW.	Neal, C. A.	937 F st. NW.
Guathney, A. J.	1611 Twelfth st. NW.	Nelson, Burrows	823 New Jersey ave. NW.
Hackney, R. E. L.	707 Thirtieth st. NW.	Newton, Samuel F.	814 Eleventh st. NW.
Hagan, J. R.	1341 F st. NW.	Nesbitt, N.	1827 Vermont ave. NW.
Harlieben, C. A.	1015 Fourteenth st. NW.	Noble, H. B.	1324 New York ave. NW.
Hammett, Whit	306 Ninth st. NW.	Nutt, Z. I.	945 Pennsylvania ave. NW.
Halley, J. K.	1321 F st. NW.	Odell, B. F.	1329 G st. NW.
Harban, J. L.	1342 New York ave. NW.	Owen, W. E.	425 First st. SE.
Hay, G. W.	2205 K st. NW.	Parker, John E.	19 Seventh st. NE.
Hendrickson, J. E.	424 Seventh st. SW.	Parcher, H. H.	401 Seventh st. NW.
Heath, H. B. F.	711 Fourteenth st. NW.	Parker, Frederick W.	137 Carroll st. SE.
Hess, John H.	1022 Fourteenth st. NW.	Parsons, Start	Corner Ninth and E sts. NW.
Helden, W. H.	1504 K st. NW.	Parsons, Randall	428 Seventh st. NW.
Hicks, J. M. C.	104 Sixth st. SE.		
Hishop, William	313 M st. NW.		
Hills, T. O.	1321 New York ave. NW.		
Hills, G. L.	Seventeenth and H sts. NW.		
Hills, J. B.	1311 F st. NW.		
Howland, C. H.	231 Four-and-a-half st. SW.		
Hopkins, J. B.	1117 G st. NW.		

1280 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Register of dentists practicing in the District of Columbia—Continued.

Name.	Residence.	Name.	Residence.
Parsons, L. M.....	Tacoma Park, D. C.	Sweeny, A. W.....	813 Vermont ave. NW.
Parsons, Harry.....	1304 Corcoran st.	Talbott, R. W.....	1111 F st. NW.
Patten, A.....	1217 Pennsylvania ave. NW.	Talbott, T. M.....	430 Seventh st. NW.
Pomeroy, N. Willis.....	802 O st. NW.	Taylor, A. H.....	910 F st. NW.
Pomeroy, W. B.....	802 O st. NW.	TenEyck, J. B.....	1601 O st. NW.
Pritchard, George J.....	813 Tenth st. NW.	Thompson, H. C.....	1113 Pennsylvania ave. NW.
Reeves, George B.....	400 East Capitol st.	Tipton, D. P.....	211 Four-and-a-half st. NW.
Reid, J. L.....	3122 N st. NW.	Townsend, George H.....	529 Thirteenth st. NW.
Reimohl, H. B.....	701 G st. NW.	Trail, William H.....	707 Thirteenth st. NW.
Rich, John B.....	1309 Connecticut ave. NW.	Van de Verg, George.....	401 Seventh st. NW.
Richer, E. E.....	529 Thirteenth st. NW.	Varela, E. C.....	512 B st. NE.
Rice, C. S.....	1835 Sixth st. NW.	Wadsworth, H. N.....	1028 Vermont ave. NW.
Roche, J. M.....	945 Pennsylvania ave. NW.	Walton, J. R.....	700 Tenth st. NW.
Roush, Seigel.....	529 Thirteenth st. NW.	Waters, O. J.....	1237 Pennsylvania ave. NW.
Rutherford, J. B.....	700 Tenth st. NW.	Waters, J. B.....	1237 Pennsylvania ave. NW.
Sasseer, P. E.....	607 South Carolina ave. SE.	Waterbury, J. E.....	911 Fourth st. NW.
Scott, C. W.....	616 Ninth st. NW.	Weisenbom, A. H.....	735 Sixth st. NE.
Scott, S. J.....	1309 H st. NW.	Welch, George B.....	1344 G st. NW.
Schatthirt, William G.....	1008 F st. NW.	Weakly, R. D.....	207 A st. SE.
Schricker, W. F.....	127 C st. NE.	Wehrle, Gottlieb.....	1941 Vermont ave. NW.
Schooley, H. M.....	527 Eleventh st. NW.	Wilson, L. B.....	1709 Fifteenth st. NW.
Seebold, A. M.....	1315 New York ave. NW.	Winter, T. H.....	611 F st. NW.
Sherwood, H. L.....	1209 Pennsylvania ave. NW.	Wisner, P. N.....	1312 T st. NW.
Sharp, George M.....	703 Third st. NW.	Wiber, D. E.....	717 Eleventh st. NW.
Shinn, V.....	909 I st. NW.	Wingo, Charles E.....	1217 Pennsylvania ave. NW.
Smith, H. S.....	1524 Pierce place.	Wiltberger, R. E. L.....	1323 G st. NW.
Smith, J. C.....	1315 New York ave. NW.	Wolf, J. L.....	1313 New York ave. NW.
Songster, Guy.....	732 Fourteenth st. NW.	Wooster, W. F.....	1228 Fourteenth st. NW.
Stewart, William W.....	400 Sixth st. NW.	Wright, W. Badington.....	1113 F st. NW.
Stewart, C. A.....	400 Sixth st. NW.	Wunder, W. H.....	423 Four-and-a-half st. SW.
Strait, N. A.....	509 Fourth st. NW.	Yeatman, Henry L.....	219 D st. NW.
Subblefield, T. W.....	Corner Eleventh and F sts. NW.	Yokum, H. Irene.....	612 Thirteenth st. NW.

Registered undertakers.

Anderson, J. D.....	Hillsdale, D. C.	Cord, J. W.....	St. Mary's Cemetery.
Arnold, W. C.....	1721½ Seventh st. NW.	Clark, Gabriel.....	Payne's Cemetery.
Barker, R. W.....	612 Eleventh st. NW.	Costello & Sons.....	35 G st. NE.
Better, Geo. H.....	1408 South Carolina ave. SE.	Clark, W. E.....	515 Eleventh st. SE.
Bell, W. H.....	215 New Jersey ave. NW.	Dabney, James H.....	441 L st. NW.
Bond, Thomas.....	Uniontown, D. C.	Davis, James H.....	1626 Eleventh st. NW.
Brown & Son, W. P.....	Corner Ninth and E sts. SE.	Dorsey, Robert.....	Tenley, D. C.
Burdett, W. D.....	1608 M st. NW.	Duvall, Lewis E.....	731 Four-and-a-half st. SW.
Burdett, E. W.....	Presbyterian Cemetery.	Dulaney, L. Lee.....	1721½ Seventh st. NW.
Bellew, Mrs. N. A.....	633 New Jersey ave. NW.	Edwards & Lanier.....	2412 H st. NW.
Barnes, Jesse.....	603 Four-and-a-half st. SW.	Freiss, Frederick W.....	1008 Sixth st. NW.
Boesenberg & Webber.....	466 K st. NW.	Gawler, Joseph.....	1726 Pennsylvania ave. NW.
Barry & Co., L. A.....	1705 Seventh st. NW.	Gasch, Francis.....	Bladensburg, Md.
Boteler, E. M. & Co.....	735 Eighth st. SE.	Geirs, Frank & Son.....	1113 Seventh st. NW.
Burgdorf, Aug.....	312 Pennsylvania ave. NW.	Gant, Augustus.....	1408 South Carolina ave. SE.
Berry, David A.....	321 Virginia ave. SW.	Gayles, Elmer.....	1120 Eighteenth st. NW.
Bowles, Henry.....	Mount Zion Cemetery.	Harvey, R. F.....	921 Seventh st. NW.
Barry, L. A.....	2400 Pennsylvania ave. NW.	Henry, Geo. B.....	1003 Third st. SW.
Clements, James T.....	1235 Thirty-second st. NW.	Herbert, J. F.....	Harmony Cemetery.
Cohen, Moses.....	1130 Eighth st. NW.	Hawkins, J. E.....	804 Third st. SE.
Cross, J. B.....	Congressional Cemetery	Henan, J. A.....	Holy Rood Cemetery.
Cain, R. S.....	1011 Seventh st. NW.	Hines, S. H.....	1223 Seventh st. NW.
Campbell, Geo.....	500 K st. SW.	Hills, William.....	411 Ridge st. NW.
Canter, Chas. E.....	314 I st. NW.	Harrod, Elias.....	Elvins ave. Hillsdale, D. C.
Cannon, Vincent & Co.....	633 New Jersey ave. NW.	Jenifer, Randall.....	632 Four-and-a-half st. SW.
Clark, J. T.....	515 Eleventh st. SE.	James, John S.....	Anacostia, D. C.
		Johnson, Wm. Thos.....	Know Alley, SW.
		Jackson, Lemuel.....	Jones's Chapel, D. C.
		Jordan, W. H.....	1617 Twelfth st. NW.
		Jones & Scott.....	706 H st. NE.

Registered undertakers—Continued.

Name.	Residence.	Name.	Residence.
Jones, Thos. O.	706 H st. NE.	Speare, W. R.	940 F st. NW.
Jones & Stamler.	Corner Ninth st. and Maryland ave. NE.	Smith, Norburn.	1423 Cedar st.
Jones, Henry.	Corner Ninth st. and Maryland ave. NE.	Sigourney, W. S.	2824 Pennsylvania ave. NW.
Kelly, Wm. B.	707 Seventh st. SW.	Spindler, W. F.	1029 Seventh st. NW.
Kaletski, Solomon.	508 Four-and-a-half st. SW.	Spindler, Fred. J.	1707 Seventh st. NW.
Kiekhany, Wm.	52 Second st. George- town.	Scott, Chas. D.	613 Pennsylvania ave. SE.
Lee, J. Wm.	332 Pennsylvania ave. NW.	Scott, McKensie.	438 Second st. SW.
Lewis, Williams.	2247 Florida ave.	Sigourney, C. F.	1410 Fourteenth st. NW.
Mitchell, John M.	914 Eleventh st. SE.	Scott, Wm. H.	1238 I st. SE.
McHenry, P. J.	Mt. Olivet Cemetery.	Sanderson, Harvey F.	31 Monroe st., Anacos- tia, D. C.
McKerichar, Alex.	Glenwood Cemetery.	Tibbs, Moses.	Twelfth st. and Rhode Island ave.
Moudy, M. L.	Rock Creek Cemetery.	Travers, D. T.	1110 Third st. SW.
Minor, D.	729 Twelfth st. SE.	Talbert, R. T.	34 H st. NE.
Motter, J. T.	Oak Hill Cemetery.	Thomas, Hugh.	Baptist Cemetery.
Moore, Jacob.	Moore's Cemetery.	Troll, Frederick N.	1705 Seventh st. NW.
Murray, Thos. F.	Anacostia, D. C.	Tabler, J. Howard.	325 C st. NW.
McCarthy, J. B.	1213 Thirty-fourth st. NW.	Taylor, Jos. W.	217 H st. NE.
Nally, Thos. R.	1248 Eleventh st. SE.	Wright, Jno. R.	1337 Tenth st. NW.
Niehok, C. B.	113 B st. SE.	West, Jno.	1113 Q st. NW.
O'Neill, Chas. W.	Congressional Cemetery	Wise, Geo. W.	2000 M st. NW.
Parker, A.	1734 L st. NW.	Wood, Martin.	702 Seventh st. SW.
Pettit, R. O. F.	1244 Thirty-second st. NW.	Winslow, Jas. Henry.	1206 R st. NW.
Spindler, Fred. & Son.	1233 Seventh st. SW.	West & Arnold.	1128 Twentieth st. NW.
Shelton, John H.	Methodist Episcopal Cemetery.	Williams & Co.	1013 Third st. SW.
		Young, R. D.	440 Third st. SW.
		Zurhorst, Geo. P.	320 Pennsylvania ave. SE.

REPORT OF DR. AUSTIN O'MALLEY.

DIPHThERIA AND SCARLET-FEVER SERVICE.

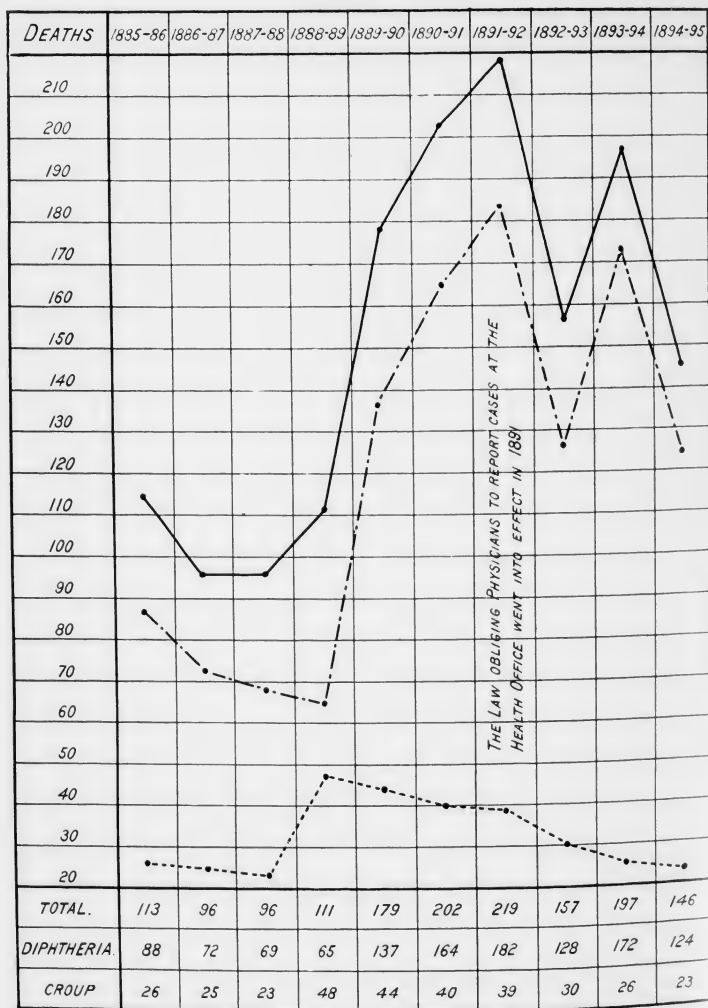
SIR: I have the honor to submit a report of the work done during the fiscal year 1894-95 in the diphtheria and scarlet-fever service. In a population of 270,514, of which 183,516 are white and 86,998 (32.16 per cent) are colored, there were 124 deaths from diphtheria. Of these 91 were among the white population and 33 among the colored. There were 23 deaths reported as from croup, 10 from nontuberculous laryngitis, 2 from pharyngitis, 6 from tonsillitis, and 9 from thrush, making 50 deaths in all, of which at least 95 per cent should be reckoned with the mortality from diphtheria. With the exception of those from croup, of which I will include 95 per cent, I have not enumerated the 50 deaths in my report.

The general mortality from diphtheria during the past year was less than it has been at any time since the fiscal year 1888-89. Among the white population it was less than it has been since the fiscal year 1887-88. Among the colored population it was considerably less than it was during the preceding year, but somewhat greater than it was during 1892-93; with the exception of 1892-93, however, it was much less than it has been since 1888-89. These favorable results are due in part to improved methods of disinfection and isolation, and to the almost general use of antitoxine by the physicians of the District since about the middle of last February. The annual average number of deaths from diphtheria in the District of Columbia is 151, and for the four months, March, April, May, and June, it is 31. During these four months of the past year there were only three deaths; in two of these cases no antitoxine was given; in one it was given too late, and I think that one may safely say that the use of antitoxine has reduced the mortality by at least 28 deaths.

If these 28 deaths had occurred the mortality would have been 152, only the average number. That the disease itself was less prevalent than in former years, except in 1891, when it was epidemic, is not true. During the calendar year 1892 there were 357 cases; in 1893, 413 cases, and in 1894, 499 cases. During the fiscal year 1893-94, however, there were 430 cases, and during the past fiscal year there were 396 cases, but in the past year I have made over 500 bacteriological examinations and have thus rejected a large number of cases which would otherwise have been reported as diphtheria. As will be seen below, 35 per cent of the cases reported as diphtheria are really not diphtheria. The disease, therefore, was more prevalent during the past year than it has been since the epidemic of 1891, but the mortality was less than it has been since 1888-89. While I feel convinced that the rejection of sulphur as a disinfectant after diphtheria of articles not subjected to streaming steam and the substitution therefor of acid bichloride of mercury, and secondly, a closer attention to details of isolation than that which heretofore obtained, have had much to do with lowering the mortality,



CHART I.—SHOWING THE MORTALITY FROM DIPHThERIA AND CROUP, WITH THE MORTALITY FROM DIPHThERIA AND CROUP COMBINED (95 PER CENT), IN THE DISTRICT OF COLUMBIA FOR TEN YEARS.



———— COMBINED DIPHThERIA AND CROUP.
 - · - · - · DIPHThERIA
 - - - - - CROUP

still, the chief hope is in the general adoption of antitoxine. Conservatism in the use of antitoxine is anything but conservatism, because the remedy is not new in the sense that it has not been tested sufficiently. The scientifically careful experimentation of men like Behring, Roux, Edlich, Kossel, and many others was all finished before the discovery had come under the notice of the profession in general. That antitoxine produces nephritis is a strange charge when it will always reduce albuminuria in a remarkable manner, even when employed hopelessly late in diphtheria.

Here much might be said about the urgent need of a diphtheria hospital if space permitted. With a good hospital, centrally located to avoid long transportation, and the use of antitoxine, diphtheria would soon be a comparatively harmless disease in the District of Columbia, where it has killed, in the mean estimate, 150 children a year.

At the last session of Congress an earnest effort was made to obtain an appropriation which would enable the health department to erect such a hospital and to make its own antitoxine, but the effort was not successful. Thanks, however, to the courtesy of Surgeon-General Wyman and of P. A. Surgeon J. J. Kinyoun, of the Marine-Hospital Service, we have been able to obtain more than sufficient antitoxine for the needs of the poor of the District.

In April, 1894, the faculty of the Georgetown Medical School informed the physicians of the District that the bacteriological laboratory of the college had been equipped for the examination of cultures from cases of suspected diphtheria, and that this work would be done free of charge. I was detailed to make the examinations.

The number of physicians who avail themselves of this offer of the faculty is constantly increasing. From April, 1894, until the beginning of July, 1895, there were 562 cultures sent in for diagnosis; 307 of these were primary cultures and 255 were secondary. One hundred and twenty-six of the primary cultures contained the Klebs-Loeffler bacillus, and 181 did not show the presence of the bacillus. Of the 126 cases in which the bacillus was present, 23, or 18.25 per cent, died. The mortality of the examined cases, excluding the months March, April, May, and June, 1895, during which antitoxine was used in most of the cases, was 27.16 per cent. The percentage of the cases reported at the health office which had been examined bacteriologically was 53.81. During the last six months of the fiscal year, 78.34 per cent of the cases reported at the health office are known to have had the diphtheria bacillus present. Of the remaining 21.66 per cent, many, of course, must have had the bacillus present, while not a few showed no clinical evidence whatever of diphtheria, except a sore throat. It will no longer be just to reject 35 per cent of the reported cases. I have, however, in my estimate for this year, as compared with other years, rejected 35 per cent of the reported cases, in order to have uniformity and because it was impossible to learn how many should really have been rejected since the bacteriological examinations have changed conditions. This rejection has exaggerated the mortality of the year in proportion to the cases, but it is an additional proof of the decadence of fatality in comparison with other years. The mortality, then, in the cases examined bacteriologically, excluding the last four months of the year, was 27.16 per cent; the average mortality in the District of Columbia for ten years is 58.16 per cent, after including 95 per cent of the croup deaths.

In making the examinations, the New York method, modified slightly to suit our limited equipment, has been used. The physicians themselves took the cultures and left them at the Georgetown Medical

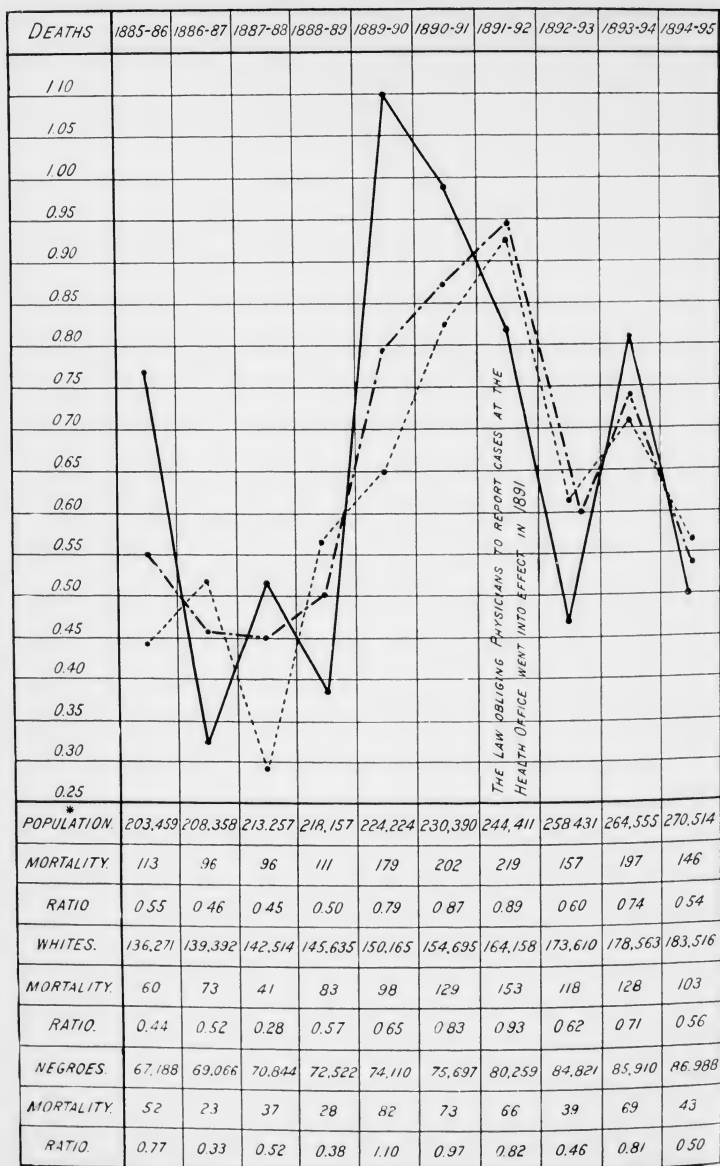
School laboratory. Loeffler's serum was the culture medium. The beef blood was collected in covered dish pans at a public abattoir, with no precaution as regards sterility in gathering, except that cattle killed after the Jewish method were rejected because the stomach contents from the severed esophagus in this case would at times be mixed with the blood. The blood was left in the ice room for thirty-six hours, and the butcher was instructed to free the clot when it stuck to the pan; then the serum was syphoned off into glass jars at the abattoir and taken to the laboratory, where it was immediately made up into Loeffler's serum and put into the culture tubes. The serum was coagulated and sterilized at 90° C. in a Wiesnegg coagulator. Three sterilizations for three hours at intervals of twenty-four hours were employed. This dry sterilization has proved amply sufficient if begun promptly after the serum has been collected. The cotton plug was pushed into the tube slightly after the sterilization, and ordinary No. 4 bottle corks were boiled and put into the tube mouth over the cotton to prevent evaporation. The culture boxes were disinfected, after being used once, in a 1 to 200 alcoholic bichloride solution. As this method destroyed some of the boxes, formaline vapor will be substituted therefor hereafter. Wooden boxes are cheaper and handier than tin boxes, although the latter can be sterilized by boiling.

It is needless to insist upon the absolute necessity of this bacteriological examination. The proper use of antitoxine is altogether dependent upon a correct knowledge of the bacteria present in the patient's throat. It is useless to give antitoxine where the Klebs-Loeffler bacillus is not present, and if this bacillus is present the physician must know whether it is there in pure culture or mixed with pyogenic microorganisms in order to give the proper dose of the serum. Biggs and Park last year, in their remarkable "Report on bacteriological investigations and diagnosis of diphtheria" to the health officer of New York City, show that according to the observations of Baginsky in Berlin, Martin in Paris, Park in New York, Morse in Boston, and others, that from 20 to 50 per cent of the cases admitted even to diphtheria hospitals have not true diphtheria. A study of the statistics of any large city will show that at least 35 per cent of the cases reported by physicians to be diphtheria are really nothing but tonsilitis, pharyngitis, with now and then a case of membranous croup. Without a bacteriological diagnosis, therefore, thirty-five families in each hundred quarantined are unjustly quarantined and subjected to the trouble and expense of useless disinfection. The suffering this can cause to a poor family whose small business is often ruined by quarantine is a very serious consideration. The city is also frequently obliged to pay for bedding which has been needlessly destroyed.

Again, no matter what experience a physician may have had he can not differentiate diphtheria in its early stages, or in children of good resisting power, from comparatively harmless throat affections. Wassermann (Ueber die persönliche Disposition u. d. Prophylaxe gegenüber Diphtherie.—*Zeitschr. f. Hyg.*, 19. B., 3. H.) has recently made a series of experiments which have proven that there exists an unexpected resisting power to diphtheria in many adults and children, and that this may be so great as to render the individual himself practically immune, while he may infect others as malignantly as if he had succumbed to the disease. In one series of 17 children from 1½ to 11 years of age and of 34 adults, 11 of these children and 28 of the adults were not only immune but they had enough active antitoxine in their blood to neutralize even a tenfold lethal dose of diphtheria toxine in some cases. The possibility of these subjects having had diphtheria was



CHART II.—SHOWING THE RATIO OF DIPHTHERIA MORTALITY PER 1,000 INHABITANTS IN THE DISTRICT OF COLUMBIA.



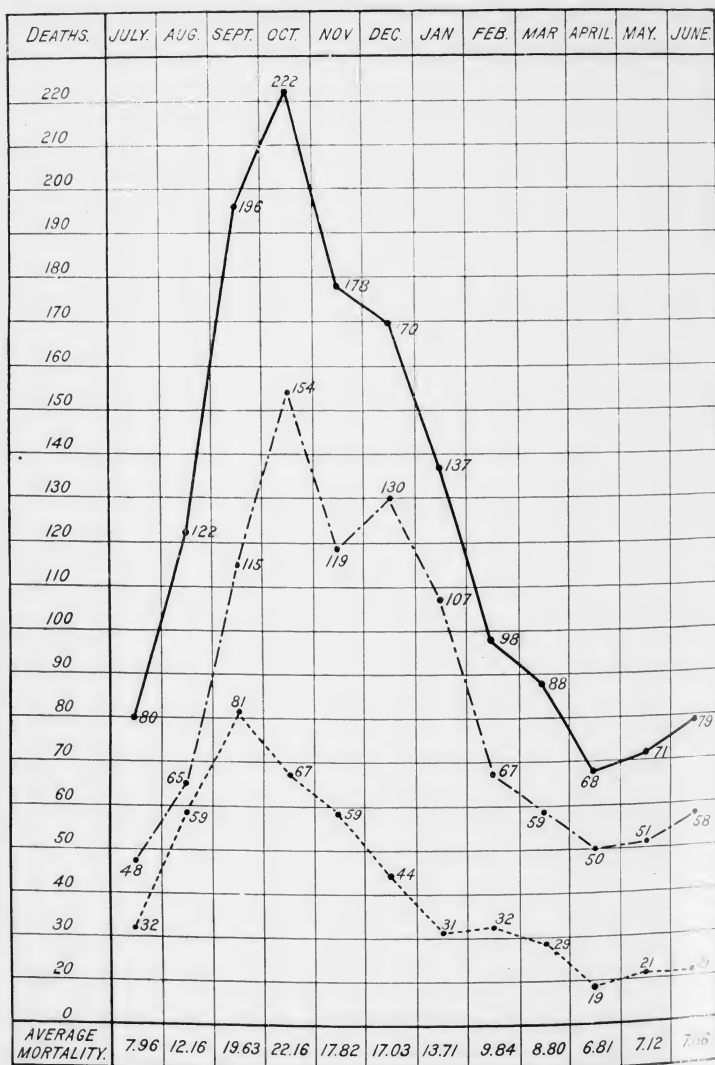
— COLORED.

- - - WHITE.

- · - GENERAL.

* ESTIMATED BY THE SANITARY MEDICAL INSPECTOR.

CHART III.—SHOWING THE MORTALITY FROM DIPHTHERIA (WITH 95 PER CENT OF THE SO-CALLED GROUP MORTALITY) BY MONTHS, FROM JULY, 1885, TO JULY, 1895.



— GENERAL.
 - - - WHITE.
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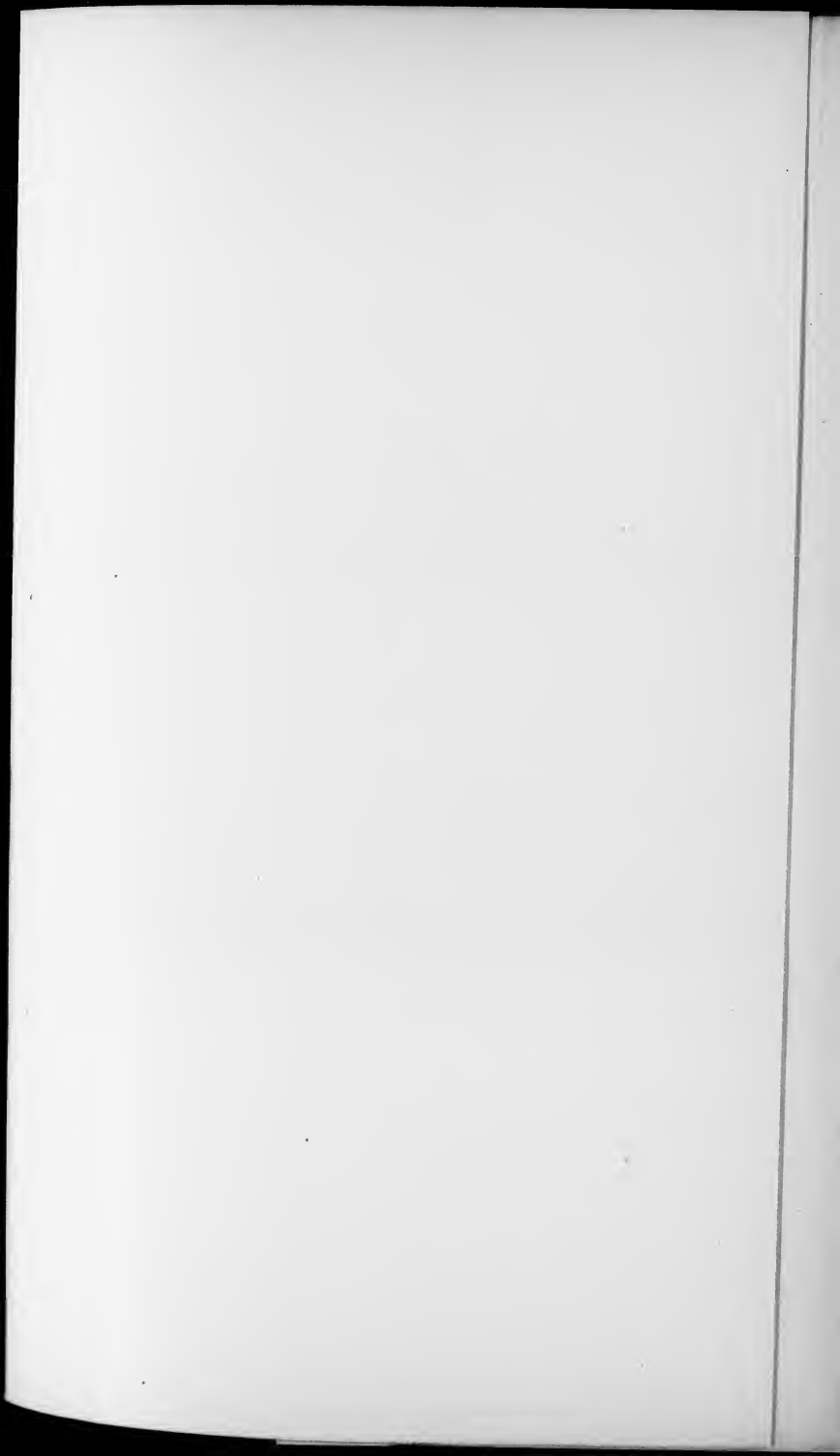
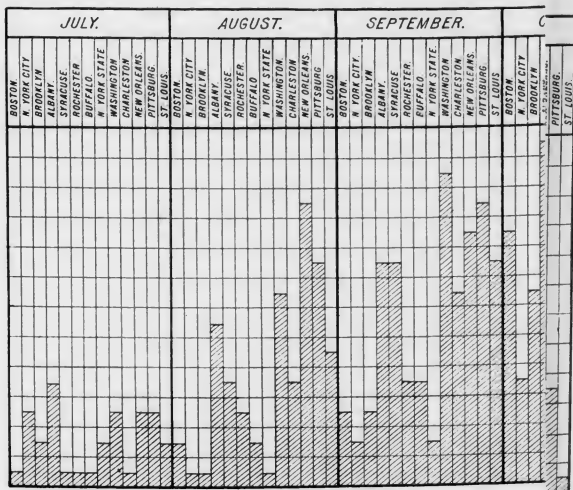


CHART IV.—SHOWING DEATHS FROM DIPHT-



excluded by their history. This explains the fact that the Klebs-Loeffler bacillus is occasionally found in healthy throats. The conclusion to draw is that the possessor of this so-called healthy throat is personally immune and really more dangerous than a person ill with diphtheria because we can not guard ourselves against him. Some have drawn the conclusion that the Klebs-Loeffler bacillus is therefore not the cause of diphtheria, which is decidedly illogical. The tubercle bacillus has been found in the healthy nostrils of hospital nurses, but that does not prove that the tubercle bacillus is not the cause of tuberculosis. This immunity explains also the mysterious spread of the disease at times. There are frequently present in our schools children with "sore throats" which really are diphtheritic. School teachers should send in to the bacteriologist cultures from every case of sore throat in their schools. It is a simple matter, easily done, and it will be of value in keeping the disease in check.

It has been observed that when diphtheria becomes epidemic this does not take place suddenly, as in an outbreak of cholera. The disease insidiously grows worse year after year until proper means for combating it are adopted, or until the susceptible subjects have all been attacked. This course was very markedly followed in the District of Columbia during the past decennium. During the fiscal years 1886-87 and 1887-88 the mortality was only 96. After that time there was a steady increase in the mortality year after year until there were 219 deaths during the year 1891-92. The law obliging physicians to report cases went into effect in January, 1891, and isolation and the exhaustion of susceptible subjects caused the first decrease in the mortality in five years. Again the mortality began to ascend, but this ascent was checked during the past year. (See Chart I.) A consideration of the same chart will show a gradual improvement in diagnosis by a descent in the curve of croup. The records of the health office during these ten years show a list of 184 deaths where the diagnosis should have been diphtheria for perhaps 95 per cent of the cases. There were 52 deaths from thrush (?), 88 from nontuberculous laryngitis, 12 from pharyngitis, 25 from tonsilitis, and 7 from various throat affections, as "gangrene of the throat" and the like.

Chart II shows the ratio of the diphtheria mortality per 1,000 inhabitants during the past decade, and the mortality, as has already been noticed, was less during the past year than it has been since the year 1888-89. The mean mortality among the white population is 0.612, among the colored population it is 0.666, an excess of 0.054 over the white mortality, thus demonstrating that the disease is somewhat more fatal among the colored race, owing in great part to the effects of poverty.

Chart III, made up from the data of ten years, shows that diphtheria is most fatal in the District of Columbia during October, and least fatal during April. About the middle of August the mortality begins to ascend rapidly and during November it descends. The disease with us is an autumnal disease.

In Chart IV I have set side by side the mortality of some of the principal cities of the eastern United States from Boston to New Orleans and the curve shows that the disease is most fatal during October, November, and December, except in New York City, where it is most fatal in March.

Dr. A. Campbell White, in a series of experiments made in New York to determine the time the diphtheria bacillus persisted after the disappearance of the membrane, found that where a 25 per cent solution of pyrozone was used as a spray every three hours during the day the

bacillus disappeared in the mean number of cases in 9.6 days after the membrane had been removed. Where a 1 to 4,000 bichloride of mercury solution was used in the nostrils, and a 1 to 3,000 in the throat, the bacillus disappeared in the mean number of cases in 7.9 days. Alcoholic stimulants were used in both cases. Recent observers, as Roux and others, have found that bichloride of mercury and carbolic acid as sprays have evil effects in diphtheria, adding only an additional toxine to the toxine of diphtheria. After the membrane disappears and the patient is apparently convalescent nurses usually cease using local applications, and here in Washington the rule is that the bacillus will persist for from three to four weeks. In one case it remained present continuously for eleven weeks from the date of the first diagnosis without reinfection. I then lost sight of the case, owing to the refusal of the physician in charge to take further cultures. In the tenth week the bacillus present killed a guinea pig in thirty-six hours.

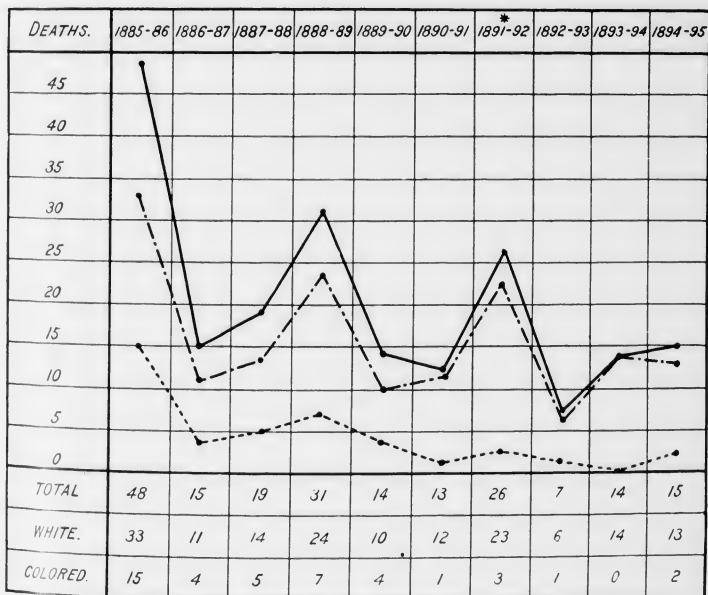
The estimated mortality in the District of Columbia from diphtheria during the past ten years is 58.16 per cent. I suppose that at least 95 per cent of the croup deaths were really diphtheria deaths. Bacteriologists acknowledge that there is a disease called membranous croup as distinct from diphtheria as typhoid is, but membranous croup is a comparatively rare disease. In a series of 286 cases (not deaths) diagnosed as membranous croup by physicians of New York City, Park found the diphtheria bacillus in 229, or 80 per cent. Membranous croup as a cause of death is extremely rare; 2 per cent is considered a liberal mortality by pathologists. I have allowed 5 per cent in all these estimates, not because I think that 5 per cent of reported croup deaths are really attributable to croup, but in order to give a fair allowance in favor of those who make this diagnosis. In four months of last year I examined five cultures taken from children dead from "membranous croup." Four of these were diphtheria and one was pneumonia. From December, 1884, to December, 1894, there were 1,518 deaths from diphtheria (95 per cent of the croup deaths included), and the estimated number of cases was 2,610; 1,518 is 58.16 per cent of 2,610. Of course this estimate is only approximately correct.

SCARLET FEVER.

During the past year there were only 16 deaths from scarlet fever—14 among the whites and two among the colored population. Five of the deaths were caused directly by the disease, and the remaining mortality was an effect of postscarlatinal nephritis. It is impossible to obtain reliable statistics for this disease here, because in a territory like the District of Columbia, where one-third of the population is colored, the diagnosis of light cases is difficult. There have been 202 deaths in the past ten years, and of these 42 (20.79 per cent) were among the colored population, and 160 (79.21 per cent) were among the white people. (See Chart V.)

Brush holds that negroes are comparatively immune. I think there is very slight foundation for this doctrine. The colored population in the District for the past ten years has been always in the proportion of almost an exact third to the white population. Since 1885 the colored population has never been below 32 per cent and never up to 34 per cent of the entire population. Now, the 42 deaths among the colored people is nearly an exact third of the 160 deaths among the whites, showing that the disease is at least as fatal among negroes as among whites. The vast majority of these deaths in both races were caused by nephritis after scarlatina. The dark skin of the negro and the neglect among the poor (and our poor are mainly colored) of calling in a physician for slight illness make it probable that many cases of death

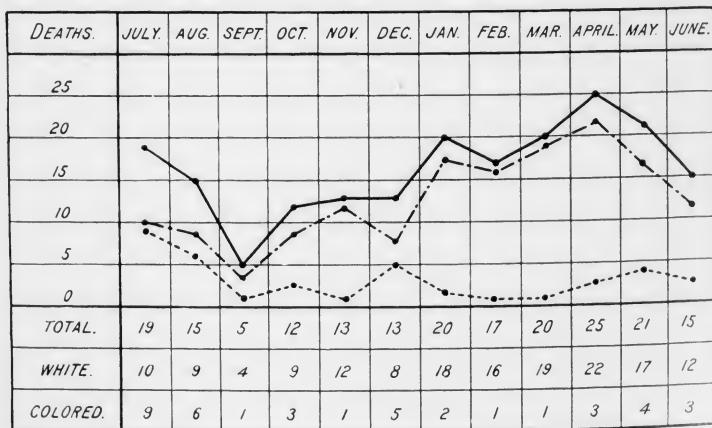
CHART V.—SHOWING THE MORTALITY FROM SCARLATINA IN THE DISTRICT OF COLUMBIA FOR TEN YEARS, FROM JULY, 1885, TO JULY, 1895, BY YEARS.



— GENERAL
 - - - WHITE.
 . . . COLORED.

* THE LAW OBLIGING PHYSICIANS TO REPORT CASES AT THE HEALTH OFFICE WENT INTO EFFECT IN 1891.

CHART VI.—SHOWING THE MORTALITY FROM SCARLATINA IN THE DISTRICT OF COLUMBIA FOR TEN YEARS, FROM JULY, 1885, TO JULY, 1895, BY MONTHS.



————— GENERAL

- - - - - WHITE

..... COLORED

from postscarlatinal nephritis among the colored race were not reported as such.

The disease is most fatal in April and least fatal in September in the District of Columbia. (See Chart VI.) Its season is thus almost the direct reverse of the diphtheria season. The estimated mortality for ten years is 4.80 per cent, making no deduction for false diagnosis, which is not infrequent, and no addition for lack of diagnosis in light cases, especially among the colored population. The mortality is probably somewhat higher. Hildebrand, after a careful study of the disease in Freiburg (*Berichte d. naturforsch. Gesell. z. Freiburg i. B.*) makes the mortality there 7.41 per cent.

One cause of the persistence of the disease is the lack of malignancy during late years. Children are sent to school while desquamation is going on, because the disease is not recognized.

The promiscuous use of free schoolbooks, which obtains in the lower grades of our schools, is probably a source of infection for both scarlatina and diphtheria. It would be some protection if a new book were given outright to a child when it begins in a grade, and the child itself should keep the book, and not mix it with the other books used by other pupils. When a child has finished with a book, destroy it, unless there is certainty that there has been no infectious disease in the child's family. This plan, however, would entail great expense, and it may be impracticable on that account.

During the Christmas and summer vacations every schoolroom in the District should be disinfected by washing the floors and furniture and walls with a 1 to 1,000 acid bichloride-of-mercury solution and then burning 4 pounds of sulphur for each 1,000 cubic feet of air space. At present there is no satisfactory method for disinfecting books.

Despite all the efforts of the health department very many children are permitted to leave the sick room before desquamation has ceased. This is another prolific source of infection. I have found even three such cases in one morning. Dr. William Gibson (*Practitioner*, London, vol. 53, p. 14) says that he has experimented in light cases of scarlet fever with the action of antiseptics upon the skin in the later stages of desquamation, and that he found such disinfected skin scales non-infectious after the patients were permitted to mingle with other children. If his assertion be borne out by further observation, it would save much trouble; but it is a dangerous experiment.

As to the length of time required for desquamation, Hildebrand found, in a series of 274 uncomplicated cases at Freiburg, that the average time was from four to six weeks. None of these patients finished desquamation in one week, 2 finished in two weeks, 6 in three weeks, 23 in four weeks, 49 in five weeks, 44 in six weeks, 41 required seven weeks, 23 required eight weeks, and 14 required more than eight weeks.

SMALLPOX.

I have the honor to submit the following report of my work done during the past year in the smallpox service.

There were 51 cases, of which 7 died. I disinfected the clothing and houses of all these patients, except the last eight reported. There was no recurrence of the disease that could be traced to clothing, bedding, furniture, or rooms after disinfection.

The disinfecting station was upon the common at Eighteenth and D streets SE. A wire fence inclosed a rectangular space about 225 feet in length by 100 feet in width. There was a barn already upon this ground, wherein we kept two horses, an ambulance, and a covered disinfecting wagon. A part of this barn, 16 by 32 feet in dimensions,

was boarded off and lined with builder's paper. This room was used as a general kitchen and as a sleeping place for five colored men—a cook, two ambulance men, and two disinfectors.

Through the courtesy of Dr. Walter Wyman, Supervising Surgeon-General of the Marine-Hospital Service, a Kinyoun-Francis portable steam disinfecter and a Kinyoun-Francis portable sulphur fumigator were placed at the disposal of the Health Department. An inclosed shed, 28 by 56 feet, was built to shelter these two machines. The sulphur fumigator was not used, because it is intended for forcing sulphur fumes into large places, like the hold of a ship, and it was not convenient to employ it for the disinfection of ordinary dwelling-house rooms.

There is a wooden building, containing two rooms, within the inclosure of the disinfecting station, and in this a medical inspector and I lived. There we had our telephone.

The ambulance and the disinfecting wagon were always ready for use. In the disinfecting wagon we kept—

1. Four sheets of bedticking, 10 by 10 feet, in which we might wrap infected bedding and clothing and all other articles that could be disinfected in the steam disinfecter. This ticking was disinfected in the engine after it had been used once.

2. Some pieces of rope to tie the bedding together, and three or four sacks in which we put small articles that were to be destroyed.

3. A few flags made of yellow muslin; small staples to fasten the flags upon a house; yellow placards having the words "Smallpox within" printed thereon; a hammer and tacks.

4. A large bottle of acid bichloride of mercury, i. e., one part bichloride of mercury to two parts commercial hydrochloric acid. Two teaspoonfuls of this solution in an ordinary wooden bucket filled within 2 inches of the top with water gave us a 1 to 1,000 solution.

5. About 30 pounds of powdered sulphur in paper bags containing 4 pounds each.

6. Five or 6 pounds of chloride of lime for privies and water closets.

7. Two mops, 2 wooden buckets, and 2 carriage sponges for wetting a room and its furniture with the acid bichloride solution.

8. Tin pans, 4 inches deep, for burning sulphur.

As soon as a patient had been removed from a house in the ambulance, we began to disinfect. Everything in the sick room that could be sterilized in the steam disinfecter we carried to the station in the sheets of ticking. We removed upholstered furniture to the station and burned it, because the chamber of the steam disinfecter was too narrow to admit furniture; moreover, the steam would destroy the varnish and the glue. Books, leather articles, furs, and men's and women's hats were burned, because these are spoiled in the steam disinfecter, and our means for applying sulphur fumes or formaline were not considered safe. Coin was boiled, and paper money and papers of value, as receipts, etc., were soaked for a few minutes in a 10 per cent solution of pure carbolic acid and dried.

The Kinyoun-Francis steam disinfecter proved very satisfactory, principally because of the excellent vacuum pump and the ease with which the steam could be made to flow; also because it burns so little coal. Even the spores of all pathogenic bacteria are destroyed by a temperature of 100° C. after from five to ten minutes' exposure unless dry heat is used; then the temperature must be much higher. When the steam can be set in motion it quickly penetrates porous articles and sterilizes inner surfaces, as Esmarch, Budde, Tenschner, and Dunker have demonstrated. The proper temperature for disinfecting is reached soonest in the inner folds of bedding, etc., when the steam is under

pressure and the air is expelled. The Kinyoun-Francis engine has a powerful vacuum pump, which rapidly exhausts the air in the chamber, and the steam can be made to flow in almost any direction. We used from 8 to 10 pounds' pressure and kept the temperature at 123° C. for twenty minutes. The steam was made to flow through the articles twice during that time. This temperature, which does not scorch paper, was considerably higher than was necessary, because the contagion of smallpox is not at all resistant to heat.

An inventory and appraisement of the articles which were to be destroyed were made, and this had to be done very minutely, because high claims were frequently entered for worthless articles. After the articles that were to be carried to the station were put in the wagon, the room and furniture were carefully washed with a 1 to 1,000 acid bichloride solution. Then, while the room was wet, we burned 4 pounds of sulphur to 1,000 cubic feet of air space, and we left the room tightly shut for twenty-four hours. Powdered sulphur in paper bags is the most convenient kind of sulphur to use, as it is cheap. A live coal from a kitchen fire is the best means for kindling it. Chloride of lime was used in the water-closets, and sulphur was burned in rooms which might possibly have been infected. Cats and dogs which we found in the infected rooms were carried to the station and shot.

The entire family was kept in the house for fourteen days after the removal of the patient, to cover a period of possible incubation, and the members of it were visited daily by a medical inspector. After fourteen days, if no symptoms of smallpox had appeared in the family, the quarantine was raised. In those cases where the sick were kept at home, the patient and the nurse were isolated and the medical inspector from the disinfecting station treated the patient. The house was placarded and a watchman was placed before it. The entire family was quarantined. Chloride of lime was used in these cases upon refuse food and stools, and all clothing and bed linen were soaked for two hours in a 1 to 1,000 acid bichloride solution before they were removed from the sick room. Dishes and other eating utensils were boiled in water for a half hour after use. When these patients recovered and all the pustules were dry and free from desquamating skin, the patient bathed and the skin was wetted with a 1 to 1,000 acid bichloride solution; then the patient was clothed in a suit of fresh clothing. The room was disinfected, as usual and the proper quantity of sulphur was burned throughout the house.

I took bacteriological cultures upon agar, gelatine, and blood serum, from the pustules of four patients with no new result.

To one series of 39 patients there were exposed 187 people to my knowledge, with no ill effect. The people exposed were either present in the sick room or in actual contact with the sick. This exposure occurred in the early stages of the disease; but two cases of hemorrhagic smallpox died before discovery, and I know of eight people who were repeatedly exposed to these two patients without infection. Some of the patients, on the other hand, were infected by the clothing of people who had been in the sick room.

In January some new frame houses near the disinfecting station were rented and furnished with new bedding and necessary articles of furniture. These houses were used as a hospital for "suspects." No case of smallpox developed among the people brought there.

AUSTIN O'MALLEY,
Medical Sanitary Inspector.

WILLIAM C. WOODWARD, M. D.,
Health Officer, Washington, D. C.

REPORT OF DR. LLEWELLYN ELIOT, M. D.

1106 P STREET NW.,
Washington, D. C., July 1, 1895.

SIR: On December 15, 1894, I was placed in charge of the Smallpox Hospital, taking with me one patient very ill from confluent variola, two patients convalescent from confluent variola, and one patient convalescent from varioloid, together with the mother of these patients and the cook, who were entirely free from the disease. But three days had elapsed since the last patient of the former outbreak—October 21 to November 18—had been discharged from the hospital and the hospital thoroughly disinfected and closed, with the hope that no more cases would occur in the city necessitating its reopening. I found sufficient hospital furniture—cots, mattresses, chairs, tables, blankets, sheets, chinaware, and stores—to enable me to handle these cases, but the later influx of patients, beginning December 21, forced me to make a requisition on the Health Department for enough hospital supplies to meet this emergency. Early in my service, all of the patients being females, only one ward was occupied, but with the admission of male patients the private rooms were used until the number of males required the use of the male ward, which had not heretofore been occupied. It is unfortunate that the Smallpox Hospital is not always kept ready for use, since when patients are under treatment it is almost impossible to find men willing to enter the building to make repairs that may be needed, such as replacing broken window panes, fitting keys, and other like jobs, or to assist in putting up stoves, screens, or do scrubbing. Being in the Smallpox Hospital is like being in the grave, for one is cut off from all association with those on the outside.

During my service there were admitted the following:

Number of case.	Date.	Sex and color.	Condition when attacked.	Nature of disease.	Result.
1.....	1894, Dec. 16	F. W.	Vaccinated successfully....	Variola confluent.....	Recovery.
2.....	do	F. W.	do	do	Do.
3.....	do	F. W.	do	do	Do.
4.....	do	F. W.	do	Varioloid.....	Do.
5.....	Dec. 21	M. C.	do	Variola maligna.....	Died.
6.....	do	F. C.	do	Variola confluent.....	Recovery.
7.....	Dec. 23	M. C.	do	do	Do.
8.....	Dec. 26	F. C.	do	Varioloid.....	Do.
9.....	do	M. C.	Vaccinated unsuccessfully.	Variola confluent and pneumonia.	Died.
10.....	do	F. C.	do	Variola confluent.....	Recovery.
11.....	do	F. C.	Never vaccinated.	do	Do.
12.....	Dec. 27	F. C.	Vaccinated successfully....	Varioloid.....	Do.
13.....	Dec. 30	M. W.	do	do	Do.
14.....	Dec. 31	F. C.	Vaccinated unsuccessfully.	do	Do.
15.....	1895, Jan. 4	M. C.	Vaccinated successfully....	do	Do.
16.....	do	M. C.	do	do	Do.
17.....	do	F. C.	do	Variola confluent.....	Do.
18.....	Jan. 9	M. C.	Never vaccinated.	do	Do.
19.....	Jan. 11	F. C.	Vaccinated successfully....	Varioloid.....	Do.
20.....	do	M. C.	do	do	Do.

Number of case.	Date.	Sex and color.	Condition when attacked.	Nature of disease.	Result.
	1895.				
21.....	Jan. 11	M. C.	Vaccinated successfully....	Varioloid.....	Recovery.
22.....	Jan. 12	M. W.	.....do.....	Variola.....	Do.
23.....	Jan. 13	M. W.	.....do.....	Varioloid; had variola in 1882.	Do.
24.....	Jan. 16	M. C.	.....do.....	Varioloid.....	Do.
25.....	Jan. 18	M. C.	.....do.....	Variola.....	Do.
26.....	.....do.....	F. C.	.....do.....	Varioloid.....	Do.
27.....	Jan. 19	M. C.	.....do.....	.....do.....	Do.
28.....	Jan. 29	F. C.	Vaccinated unsuccessfully.	Variola confluent.....	Do.
29.....	Feb. 1	M. W.	Vaccinated successfully....	Varioloid; also in 1864 and 1881.	Do.
30.....	Feb. 27	F. C.	Vaccinated unsuccessfully.	Variola vaccinia.....	Do.
31.....	Mar. 1	M. C.	Vaccinated successfully....	Variola confluent.....	Do.
32.....	Mar. 10	M. C.	.....do.....	.....do.....	Do.
33.....	Mar. 13	M. C.	.....do.....	.....do.....	Do.
34.....	.....do.....	M. C.	.....do.....	.....do.....	Do.

In addition to this list there were admitted five mothers who were to assist in the care of their children; four of these had been vaccinated within a few months of their admission.

These patients are classified as follows:

Varioloid.....	15
Variola confluent.....	18
Variola vaccinia.....	1
Total.....	34

I make no distinction between discrete variola and varioloid.

Recovered.....	32
Died.....	2
Mortality percentage.....	6.25
Cases vaccinated successfully.....	27
Cases vaccinated unsuccessfully.....	5
Cases never vaccinated.....	2
Cases vaccinated successfully in childhood but not since.....	8

Of the 27 successful vaccinations Nos. 1, 2, 3, 4, and 27 were vaccinated after the disease manifested itself, therefore the vaccination exercised no protective influence. No. 15 was vaccinated about two months before admission, and the scab had not become detached. Adding the 5 cases (1, 2, 3, 4, and 27) too late to afford protection and the 8 cases (5, 6, 7, 12, 22, 29, 31, 34) not vaccinated successfully since childhood, we have 13 cases not protected; add then the 5 unsuccessful cases (9, 10, 14, 28, 30) and the 2 cases (11, 18) never vaccinated to this total 13 and the number of patients not protected is 20, leaving 13 cases occurring in patients vaccinated within four years. Carrying our figures still further we find of those 14 patients protected by vaccination performed within four years of the attack, 9 (8, 13, 16, 19, 20, 21, 23, 24, 26) were attacked by varioloid and 5 were subject to variola confluent (17, 25, 32, 33), while in 1 (15) whether or not the vaccination had any modifying influence I am unable to say. Of the 2 fatal cases, 1 (5) had been vaccinated successfully in childhood, the other (9) had never been successfully vaccinated. One case (17) was complicated by puerperal metritis, and 1 case (32) was complicated by an extensive burn of the arm and shoulder. The 2 cases (11 and 18) which had never been vaccinated suffered from variola vera, 1 (11) so severely that little hope for her recovery was entertained. She, however, made an excellent recovery after passing through the worst case of smallpox it has ever been my fortune to attend. We have in this outbreak illustrative evidence of the protective power of successful vaccination.

VACCINATION AND THE RAVAGES OF SMALLPOX.

In this day of general enlightenment it would appear uncalled for to refer to the benefits of vaccination, but while this enlightenment pervades all classes of society it must be admitted that vaccination has gone out of fashion and a state of apathy on this subject has taken its place. In 1871 the same condition of indifference existed and it required an epidemic, which encircled the world, to bring the people to a correct appreciation of the beneficial effects of a successful vaccination. The early history of smallpox is shrouded in obscurity, the first account of it going back to 520 A. D. In 1707 Iceland lost 18,000 people of a population of 50,000 from smallpox. In 1734 Greenland lost two-thirds of its population by its first epidemic of smallpox. Before vaccination, Germany had 66 deaths from smallpox in every 1,000 deaths. Neimeyer states that in the last century one-tenth of the population died of smallpox, or about 400,000 people every year, in Europe; another tenth were disfigured by the disease. In Turkey in Asia, according to missionary accounts, where vaccination is not performed, scarcely two out of a hundred persons escape smallpox. Under the law of England every child must be vaccinated before it is 3 months old and revaccinated at the twelfth year. Morton writes (*Dietetic and Hygienic Gazette*, Vol. X, p. 360, July, 1894—*Journal A. M. A.*):

In referring to tabulated statistics we find that in Copenhagen the fatality from smallpox is but one-eleventh part of what it was before vaccination was introduced; in Sweden, about one-thirteenth; in Berlin and parts of Austria, one-twentieth; in Westphalia, one-twenty-fifth. The German army, where vaccination and revaccination are compulsory, and which numbered a million men during the war with France in 1870, lost only 286 men with smallpox, while the French army lost several thousand by that disease.

Welch has reported the death rate among 5,000 cases as 58 per cent in the unvaccinated and but 16 per cent among the vaccinated. He also furnishes the strongest statistical argument I can advance in the following table. (Morton, *loc. cit.*) Dr. Welch's statistics show that of the children who were admitted to the smallpox hospital in Philadelphia under 1 year of age, 78 were unvaccinated and 57 died; 2 had been vaccinated and had exceedingly mild cases:

	Per cent.
From the ages of 1 to 7 years:	
404 were unvaccinated, and 208 died	51
35 were vaccinated in infancy and 2 died	5
From the ages of 7 to 14 years:	
222 were unvaccinated and 71 died	31
137 were vaccinated in infancy, 13 died	9
From 14 years and upward:	
1,038 were unvaccinated, 681 died	65
2,967 were vaccinated in infancy, 495 died	16

The deductions to be drawn from these tables are that the liability to acquire smallpox and to die from it increases as years elapse after vaccination. We learn (Kober, *Va. Med. Mo.*, Vol. XXII, p. 17) that in Prussia from 1816 to 1874 the mortality from smallpox was from 7.32 to 11.86 per 100,000 annually, but that since the enactment of the compulsory vaccination laws this mortality has been reduced to 0.34 to 3.62 per 100,000, and there has not been a death from smallpox in the Prussian army since 1875, while the Austrian army still furnishes a mortality of from 10 to 47 per 100,000, and the French army 2 to 27 per 100,000.

The Medical Record, November 7, 1891, reports 25,000 deaths during a recent epidemic of smallpox in Guatemala. The same journal, May 30, 1891, says:

In Germany vaccination is compulsory; in France it is not. In Germany the total mortality in the entire country from smallpox was 168. In Paris alone during the same year it was 382. In Alsace the annual mortality per 100,000 from smallpox has fallen since the annexation of the province to Germany from 2.14 to 0.22. The citizens of Zurich voted to do away with compulsory vaccination in 1883. The number of deaths from smallpox in 1882 was 3; in 1883, 8; in 1885, 52; and in 1886, 85.

During the late war between the States there occurred among the United States forces, the following cases of smallpox: White troops, May 1, 1861, to June 30, 1866, 12,236 cases, 4,717 deaths; colored troops, July 1, 1863, to June 30, 1866, 6,716 cases, 2,341 deaths; a total of 18,952 cases with 7,058 deaths. (Med. and Surg. Hist. War Rebellion, Part III. Med. Vol., p. 624.) Among the Confederate prisoners we find 9,830 cases occurred with 2,624 deaths. (Ap. cit., p. 629.)

During the last ten years, however, but 3 deaths from smallpox have occurred in the United States Army, where vaccination is compulsory. Smallpox is a preventable disease, in every sense of the term preventable, through an immunity conferred upon the system through a successful vaccination. This immunity is actively operative for a period of five years, when a revaccination should be practiced. Although a few individuals who have acquired this immunity will have smallpox, these few cases will not in the least militate against the fact that vaccination affords the protection necessary against the disease; the number of individuals attacked by the disease is so small that the percentage of those in any large protected community who are attacked to those who escape an attack is so infinitesimal that it requires the sixth decimal to record it; in other words, in an estimated population of the District of Columbia of 280,000, the percentage of cases was only 0.0000267, calculating upon the number of cases occurring (75) during the recent outbreak, which number is in excess of the number of cases which occurred. While we have a positive agent in the prevention of smallpox, no such agent exists in the prevention of diphtheria or of scarlet fever, diseases which prevail at all seasons of the year and which until very recently, or until the discovery of the curative and preventive effects of the diphtheria antitoxine, caused the deaths of hundreds of children.

Since smallpox is a disease which is preventable, and which therefore should be of the rarest occurrence if the proper measures are adopted, no plausible reason exists for its continued presence in any community where the public health is in proper hands. I agree with Foster (System of Medicine, Phila. Pepper, Vol. I, p. 467, Art. Vaccina), who says:

Suppose that of 100 persons vaccinated 20 fail to be protected permanently, that all persons not vaccinated are unprotected, and throughout the civilized world the proportion of vaccinated to unvaccinated persons is as 90 to 10. Making no pretense to arithmetical accuracy; it may certainly be said that the suppositions are well within the truth. It follows from them that in a community of 10,000 persons there will be 9,000 who have been vaccinated and 1,000 who have not. Of the former, 1,800 will have failed to secure lasting protection. Therefore, in case of an epidemic there will probably be a proportion of 18 cases of smallpox in the vaccinated to 10 in the unvaccinated; and yet this should not obscure the fact that of the 9,000, more than 7,000 were absolutely protected, whereas of the 1,000 not vaccinated not one would escape the disease if exposed to it. When we add the further observation that of the 1,800 cases of smallpox among the vaccinated not more than 30 or 40 would probably prove fatal, while of the 1,000 cases in the unvaccinated about 200 would end in death, we have a striking demonstration of the efficiency of vaccination.

Smallpox at the present date in countries where vaccination is universally practiced is not a fatal disease. It should be less fatal than either diphtheria or scarlet fever, relatively speaking, as shown by the tables appended.

While we of the more progressive class of people have been taught to consider smallpox the most loathsome and a most fatal disease, the Chinese regard it as a mild disorder, simply placing a red rag about the head of the child as a mark distinguishing the diseased one, while varioloid cases are hardly noticed, as in good weather they are allowed to mingle with other children and play about the streets. In Korea about one-third of the people are pockmarked, nor do these people think a child's life is certain until it has passed through the disease. Recently the adoption of red bed hangings has been advocated by one or two medical men in the management of smallpox. This is but the adoption of a custom of China. In a report to the Bureau of Medicine and Surgery, United States Navy, 1891, page 80, P. A. Surg. J. W. Baker writes:

Children affected with this disease are clothed in red, which is supposed to insure a more rapid and perfect recovery by propitiation of the "pest god," who looks after this disease and presides over its victims. Often the cautious parents will clothe their well children in red during the epidemics in order to deceive this "god," and they affirm that sometimes he will pass such children by. * * * As the Chinese have found from experience that the disease is not so fatal among girls, they frequently put girls' clothes on their boys, still carrying out this deception.

The adoption of vaccination requires statutory enactments, and the cooperation of the heads of all mercantile establishments, of institutions of learning, of asylums, of penal institutions, and the military forces. As each establishment falls into line the enactment of laws upon the subject of compulsory vaccination becomes an easy matter. With the state owning and controlling the production of vaccine virus and legal compulsion being established, smallpox will become one of the diseases which will be a curiosity in medical practice.

The tables which are appended show the reported cases and the mortality of smallpox, diphtheria, and scarlet fever covering a number of years, and are of interest to the student of mortality. Much time and labor have been expended upon them. They show the number of cases reported with deaths from these diseases in the cities of Boston, Philadelphia, Milwaukee, New York, and Washington, and tend to confirm my statement that smallpox is not a fatal disease if the proper protection is acquired through successful vaccination.

DISINFECTION.

For disinfection, I think the employment of heat, of solutions of carbolic acid, of the fumes of burning sulphur, and the gas generated from burning a mixture of purified ether and commercial chloroform the best agents in the destruction of the smallpox poison. While carbolic acid is much more expensive than the corrosive chloride of mercury, its use is free from the destructive properties of the latter. It will destroy the germs which we wish to fight in infectious diseases, but the strength of our solutions must be rather of the indefinite than of the infinitesimal character. Sheetings—washable goods—must be subjected to a thorough boiling in carbolic acid solution, and then a rinsing in clear water before they are free of germs. Dishes, table utensils, and even furniture, money, letters, and valuable papers can be thoroughly disinfected in a solution of carbolic acid, as well as with any other germicidal solution. Rooms and buildings are subjected to the sulphur

fumes, aided, if necessary, by the burning of ether and chloroform. Blankets, clothing, carpets, mattresses, if not soiled by the patient depositing crusts upon them, are subjected to disinfection by heat. If, however, they are soiled, cleaning with a solution of carbolic acid should be had before the steaming. Books not in actual use by the patient during his sickness can be rendered perfectly safe with sulphur, but those in use had better be destroyed. In regard to disinfection, I conclude that there should be a properly equipped disinfection plant, and that the destruction of personal property or the injury to real property should be as limited as consistent with safety. The law of eminent domain allows the health authorities to destroy, without compensation; and for this reason the greatest care should be exercised in this matter.

THE SMALLPOX HOSPITAL.

The hospital for smallpox has been located upon the present reservation for more than forty years. The present hospital was built about 1871, and, with the expenditure of a little money at a time when it is free from patients, it would be all that is necessary for the handling of these cases. Never in my recollection has it been a tumble-down affair, and my first visit to it dates in 1878, and having passed two terms as resident physician in charge during times when the wintery weather was severest, I am perfectly competent to pass an opinion as to whether or not it is habitable.

There has never been any objection to its present location which has been well founded, and the only objections have come from the jail authorities, who claim that smallpox has always come from the hospital when it appeared in the jail. Should this be true, it is entirely chargeable to the parsimonious policy of the department under which it is operated in not providing the proper safeguards about their building. I am perfectly conversant with the fact that during the time of these objections there was no fence dividing the jail grounds from the smallpox grounds; that smallpox scabs were received in the mails, opened in the public offices of the building, and then ordered destroyed; that visitors were permitted to visit the prisoners and bring them articles of food and other things. Is it not more likely that the sources of infection to the building came in during the daytime by the front door, and not during the nighttime through the back door?

On but one occasion did a patient from the hospital come close enough to the jail building to do any damage. That patient escaped from the hospital during the night, wrapped in his blanket, and wandered to the back basement entrance of the jail. When the door was opened the iron grating still prevented him from entering, nor did he enter. A guard from the Washington Asylum was called to return him to the hospital. Why should the jail, with its investing walls, be more liable to a visit from this disease than the almshouse, each being about the same distance from the hospital, but with the additional factors in favor of the almshouse of its being at that time the source of supply of bedding, provisions, fuel, nurses, and medical attendants? Only once did the disease occur in the almshouse, and then it came from the city, and never did it occur in the asylum hospital. I was the attendant of the two hospitals for some years.

Malarial influences do not weigh as an objection, since patients do not usually remain long enough to become impregnated with malaria, and from observation I have learned that it requires about two years' residence in this section to produce the characteristic manifestations of malaria.

The present hospital is not large enough, although upon crowding it would accommodate 60 patients. The building is good—not the ramshackle affair usually described in the daily papers—but it needs some repairing. Now that it is decided to build a new smallpox hospital, an annex on the same plan as the present hospital would make a quarantine hospital with which the authorities would be satisfied, of which the community would have no contempt, and of which patients or suspects would have no fear.

DISPOSAL OF THE DEAD.

The disposal of those dead from zymotic diseases, as well as from other diseases, becomes a matter of the utmost importance to the health of large communities in order to prevent evil consequences. There are but two methods of effecting this object—the one, earth burials in metallic caskets, wherein slow oxidation takes place before the casket will yield to the effects of such burial; the other, the quick and effective destruction of both body and disease by fire. The method of disposal by cremation is one that is being adopted by scientific thinkers, and crematories are rapidly increasing in number both in this country and in Europe. The earth burial is defended upon sentimental and biblical grounds. It is not necessary to dwell upon this subject, since the threatened dangers of water and soil pollution by the location of cemeteries in populated communities are of common occurrence, necessitating the disinterment and removal of the dead.

The method pursued and faithfully executed by Charles H. Pemberton, acting in the dual capacity of nurse and undertaker at the smallpox hospital, has been to carefully envelop the body in a sheet saturated with a strong solution of the corrosive chloride of mercury; a blanket is then wrapped about the body and lime is freely thrown into the coffin, which is then closed securely. Lime is thrown in the bottom of the grave, which is much deeper than the ordinary grave. After the coffin is deposited in the grave more lime is thrown in, and then the grave is filled. About one barrel of lime is used to each grave. These graves should never be reopened, although no regulation exists to prevent such a reopening.

TREATMENT.

Upon the treatment of smallpox I shall have little to say. After an experience in the treatment of this disease which has rung the changes upon all treatments—the expectant, the bitartrate of potash, the salicylic acid, the antiseptic, and, finally, the do-nothing—I have returned to the old-fashioned saffron-tea treatment, aided by free stimulation and the sulphide of calcium. Saffron tea is given with an occasional administration of spiritus ætheris nitrosi, so as to bring the pustules to the fullest development. Should debility appear extreme, whisky is given, not in the ordinary doses, but to the extent of 3 ounces at a dose if the condition warrants, since there is little danger of intoxication. When the pustules have reached the fullest development I have given the sulphide of calcium in doses of 1 grain every three hours, to rapidly increase to 4-grain doses.

As external applications I have used the glycerite of papoid, for which suggestion I am indebted to Dr. J. R. Nevitt, my predecessor in office; the corrosive chloride of mercury in strong solution; the antiseptic powder of Tyree, and solution of boracic acid. Throat symptoms, constipation, and other complications must be met by appropriate remedies. Abscesses and a secondary eruption frequently detain patients after they are otherwise well.

It has been my rule to detain varioloid cases twenty-one days, confluent variola cases forty days, and malignant cases, when they chance to recover, about ninety days.

To the District of Columbia belongs the honor of the first employment of the vaccine serum in the treatment of variola. I append histories of cases so treated. These cases formed the basis of an article presented to the American Medical Association at its meeting in Baltimore May 7 to 10, 1895, and published in the Medical News, Philadelphia, June 29, 1895, and from which I have made extracts for this report:

Effects of the treatment.—Under this treatment the pulse increases in volume and in number of pulsations; the quantity of albumin in the urine decreases; there is a rise of temperature, followed by a fall; the papules abort and the pustules desiccate, and there is very little pitting. While employing the serum other treatment is given. In five cases in which the vaccine serum was used one patient was in a septic state when the treatment was commenced, and died of malignant variola; the other four were cured of variola; one, however, after being cured of confluent variola and discharged from the hospital, was readmitted with what I supposed to be a genuine case of cowpox, a septic infection or an unfortunate sequela of the serum. She did not have a second attack of variola vera.

CASE I.—W. G., male, colored, aged 28 years, a laborer, was admitted to the Smallpox Hospital December 21, 1894, ill with variola maligna. He had been successfully vaccinated four years ago. His condition on admission was very unfavorable; the eruption was confluent, accompanied with a high temperature and violent delirium. The temperature from December 21 to 28 varied from 103.6° to 99°. During this time the temperature steadily declined, whereas the pulse and respiration remained high, the delirium continuing about the same. This was so violent at times that restraint became necessary. On December 25 considerable hemorrhage occurred in the pustules, and there was much gastric irritation. On December 28, at 10 a. m., the patient's condition was as follows: Temperature, 99°; pulse rate, 120; respirations, 32, and quite superficial. The patient was conscious at times, but very weak. A small quantity of urine was passed, and it was found to contain albumin 10 per cent per volume.

At this time 15 c. c. of the serum were injected subcutaneously after the skin had been carefully disinfected. At 11 a. m. the respiration became deeper, the pulse stronger and fuller, the temperature 99.6°. The man was very thirsty. The oedema caused by the injection had entirely disappeared. At 2.30 p. m. another dose of 15 c. c. was given, his condition being about the same, the temperature 100°, the pulse 120, the respirations 32. The respiration was deeper, the pulse stronger, and there was considerable expectoration. At 9 p. m. another dose of 15 c. c. was given. At the time of the injection the skin over the face had become very dry, hard, and bleached, the skin in its texture resembling very much the appearance of elephant hide. The temperature was now 99°, the pulse 120, respirations 28, and shallow; expectoration was free and tinged with blood.

On the morning of the 29th another dose of 15 c. c. of serum was given, the temperature being 98°, the pulse rate 120, the respirations 32. No urine had been passed during the preceding twelve hours. The man was plainly growing weaker, and he died on the morning of the 31st. No post-mortem examination was held. The total quantity of serum injected was 60 c. c.; the number of injections, four. No effect was produced upon the eruption or upon the disease. The peculiar feeling of the skin in this patient is frequently noticed in malignant cases.

CASE II.—B. L., a male, colored, aged 20 years, a driver, was admitted to the Smallpox Hospital on January 4, 1895, with the diagnosis of variola. He had been successfully vaccinated some time before. An eruption, lasting about five days, extended over the face, chest, arms, body, and legs. Upon his admission his axillary temperature was 99.8°, the pulse rate 98, respirations 24. He had considerable bronchitis. At 11 a. m., January 5, after thorough disinfection of the part, 15 c. c. of the serum were subcutaneously injected at a point about 1½ inches below the nipple. As the serum was injected quite a large wheal, 2 inches square, appeared, very tightly stretching the skin, and having at its middle numerous pits, appearing like a vaccination cicatrix, and covering a space of about 1 inch square. As the wheal was massaged the pits disappeared. During the process of injection the patient became very much frightened, but experienced little if any pain. The urine, on examination, showed 8 per cent of albumin per volume. One hour after the injection the temperature registered 100.8°, the pulse 88, strong, the respirations 24 and deeper. At 5 p. m. of the same day 15 c. c. of the serum were injected. The temperature was then 102°, the pulse rate 90, full and strong, the respiration deep and full, the man

expectorating freely. At 6 p. m. the temperature was 100.8° , the pulse rate 96, the respirations 30. On January 6 the temperature was 102.2° , the pulse 92, full and strong, respirations 24 and of good depth. The patient complained of soreness at the point of injection.

Quite a notable change occurred in the pustules, which appeared to be losing their moist character, having an inspissated appearance, and quite a number of very small new pustules appeared in the healthy skin. At 8 p. m. the man was in a profuse perspiration, the temperature was 99.4° , the pulse 88, and respirations 28; the urine showed a marked decrease in the quantity of albumin. Thirty c. c. of the serum were again administered. About one-half an hour after this injection the patient complained of a difficulty in breathing, but this passed off in the course of an hour. At 9 p. m. another dose of 30 c. c. was given. This produced no ill effects. The temperature was 102° , the pulse rate 100, the respirations 26. Albumin was present, but in smaller quantity. On the following day there was a marked change in the eruption. All the former pustules were now drying, and the smaller ones that had appeared the previous day seemed to have aborted. The general condition of the patient was more favorable. No further serum treatment was given, and the man was convalescent on January 16. During a period of forty-eight hours 105 c. c. of the serum were given in five injections.

On January 16 the scabs were becoming detached from the skin and presented a very favorable appearance. There were no indications that there would be any pitting, whereas two other cases, not receiving the serum, to all appearances identical with this one, will be badly marked.

CASE III.—B. S., a male, colored, aged 19 years, a waiter, who had never been vaccinated, was admitted to the Smallpox Hospital with the diagnosis of variola. On January 25, 1895, at 8 p. m., he had an eruption on the face, chest, and scalp; he also suffered from pharyngitis, and had a temperature of 103° . On the 26th, at 10.30 a. m., his temperature was 100.5° , the pulse rate 88, the respirations 28; 23 c. c. of serum (second supply) were injected into the right side of chest. The usual wheal of edematous tissue followed. At 3 p. m. the temperature was 102.4° . At 7 p. m., the temperature was 102.6° , the pulse rate 96, the respirations 24. Injections of 22 c. c. were made. On the 27th the morning temperature was 100° , the pulse 98, the respirations 26. No further serum treatment was given, as the papules were aborting. On February 2 the man was convalescent. The number of injections was two, and the quantity of serum used was 45 c. c.

CASE IV.—F. H., a male, colored, aged 19 years, a laborer, was admitted to the Smallpox Hospital on the night of January 18, 1895, with the diagnosis of variola. He had been vaccinated successfully some years ago. As this man was in a very filthy condition he was given a hot (bichlorid) bath upon his admission, when the points of eruption showed themselves very prominently and profusely, giving indications of a severe attack of the disease. The temperature was 99.8° , the pulse 88 and strong, the respirations 24.

On January 19, at 11 a. m., his temperature was 100.2° , the pulse 84, the respirations 22. There were papules on his face, the urine was amber in color, its reaction neutral, its specific gravity 1012, and there was no reaction of albumin to heat and nitric acid. An injection of 15 c. c. of the serum was made into the right buttock, followed by the usual appearances, but in addition the edematous surface became very cold. There was no pain. At 11.30 a. m. his temperature was 99.8° , his pulse 84, and the respirations 24 and fuller. At 2 p. m. the temperature was 100.2° , the pulse 100, the respirations 30. We now injected 30 c. c. of serum into the left buttock, with the same results as before. At 3 p. m. the temperature was 100° , the pulse 96, the respirations 28. At 8 p. m. the temperature was 101.8° , the pulse 108, the respirations 28. We again injected 30 c. c. under the right nipple. This caused some burning and uneasiness, and again appeared the edema and coldness as before noted. There was no change in the eruption. At 10 p. m. the temperature was 101.8° , the pulse 112, the respirations 30. There was no albumin in the urine.

On January 20, at 11 a. m., the temperature was 100.2° , the pulse 102, the respirations 24. We again injected 30 c. c. into the left buttock. The point of the insertion of the needle in the chest wall was still sore, but that of the buttock was not noticeable. At 3 p. m. the temperature was 101.8° , the pulse 114, the respirations 34. The man complained of considerable chest oppression. At 7 p. m. the temperature was 101.8° , the pulse 110, the respirations 24, and he had no further oppression.

On January 21, at 10.30 a. m., the temperature was 99.4° , the pulse 88, the respirations 28. The eruption had become dry, and only three new spots had appeared, one small one on the right side of the neck, and two small ones on the left side. We now injected 30 c. c. into the front of the thigh. At 3 p. m. the temperature was 99.8° , the pulse 96, the respirations 30.

On January 22 the temperature was 99.8° , the pulse 100, the respirations 26. No further serum treatment was given.

On January 23 the temperature was 99° , the pulse rate 88, the respirations 26. A few points of eruption existed on the neck and body of the size of a pin head. The other points of eruption had dried. The man was allowed the liberty of the ward, and was given calcium sulphid gr. ij every three hours. He was discharged from the hospital February 5. The number of injections had been five, the quantity of serum used 165 c. c.

CASE V.—B. R., female, colored, aged 16 years, a domestic, was admitted to the Smallpox Hospital on January 29, 1895, with the diagnosis of variola vera. She had been vaccinated unsuccessfully. The temperature on admission was 101.8° , the pulse 120, the respirations 34.

On January 30, at 10 a. m., the temperature was 99.6° , the pulse 94, the respirations 36. Eruptions existed on the face, neck, chest, and feet. She had pharyngitis and bronchitis, with free expectoration, and she was menstruating. Under the right breast 30 c. c. of the third supply of serum were injected. (This serum was from the blood drawn the second week after the recovery of the calf.) The tissues surrounding the point of injection became hard, swollen, and cold (3 by $2\frac{1}{2}$ inches), and were elevated about one-half an inch, with the pits before described. There was no pain. At 1 p. m. the temperature was 100.6° , the pulse 88, the respirations 24 to 30 in the half minute, very superficial, with very little chest movement. The point of injection was still sore. At 5 p. m. the temperature was 103.6° , the pulse rate 112, the respirations 36 and of better character. There was still soreness at the point of injection. At 7 p. m. the temperature was 103.2° , the pulse 102, the respirations 32. I injected 22 c. c. into the right buttock, with the same results as in the former injection. A few papules became umbilicated.

On January 31, 10.30 a. m., the temperature was 100.4° , the pulse 74, the respirations 22. Several pustules had filled and were umbilicating, others had dried. I injected 15 c. c. of serum into the left buttock, followed by the same swelling and hardness. The point of injection in right buttock was not sore, but that under the breast was sore. At 1.30 p. m. the temperature was 99° , the pulse 80, the respirations 28. At 5 p. m. the axillary temperature was 98° , the tongue temperature 99° , the pulse 72, the respirations 28. At 10 p. m. the temperature was 99.2° , the pulse rate 70, the respirations 26. There were no new points of eruption.

On February 1 the temperature was 99° , the pulse 86, the respirations 28. Two small pustules had appeared on the face. The woman was given the liberty of the ward February 5, no further serum treatment being instituted. The number of injections was three, and the quantity of serum used 67 c. c.

This patient was discharged on February 22 entirely well, but was readmitted on February 27 from the Freedmen's Hospital, with what I think was either variola vaccine, an unfortunate effect of the vaccine serum, or a septic infection. Her disease went through a course of fever and eruption, followed by a number of abscesses. While I have never seen a well-marked case of cowpox, some cases having as many as 400 pustules, I am more than positive it was either a case of cowpox or an eruption attending a large dosage of strong serum.

CONCLUSIONS.

From my limited experience with vaccine serum I conclude:

1. Vaccine serum modifies variola.
2. Vaccine serum has a marked influence upon the eruption of the disease, in that the papules or vesicles abort and the pustules desiccate.
3. Vaccine serum prevents pitting.
4. Vaccine serum should be accorded a place in the therapeutics of variola.

Whether or not my experience will be confirmed by that of others I can not say; it remains for future investigators, working upon the same lines, either to prove or disprove my conclusions.

1300 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Number of cases and deaths from diphtheria, scarlet fever, and smallpox in Boston, Mass., from 1872 to 1894, inclusive.

Year.	Diphtheria.			Scarlet fever.			Smallpox. ¹		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
1872							2,592	738	28.40
1873							1,103	302	27.30
1874							7	2	28.50
1875							5	1	20.00
1876							6	2	33.30
1877							17	4	23.50
1878	1,370	448	32.70	1,334	104	7.70			
1879	1,167	391	33.50	848	68	8.00			
1880	1,715	588	34.20	951	149	16.60			
1881	1,680	601	35.70	497	33	6.60		1	25.00
1882	1,386	458	33.04	383	35	9.10	44	6	13.60
1883	1,415	444	31.40	689	75	10.80	24	8	33.30
1884	1,212	345	28.46	1,408	211	14.90	8	1	12.40
1885	1,263	334	26.44	2,526	209	8.20	1	1	100.00
1886	1,188	329	27.69	1,665	156	9.20	11	1	9.00
1887	1,049	316	30.12	1,149	81	7.00	1		
1888	1,411	470	33.30	1,549	195	12.58	4		
1889	1,814	564	31.09	707	65	9.19	8	1	12.40
1890	1,475	401	27.18	464	23	4.96	10	2	20.00
1891	831	232	27.91	924	42	4.54	1		
1892	1,353	414	30.59	1,327	64	4.82			
1893	1,465	476	32.49	2,938	262	8.91			
1894	3,019	817	27.06	2,580	248	9.61	26	4	15.30
				2,230	192	8.60	77	22	28.50
Total	24,803	7,628	30.754	24,169	2,212	9.152	3,949	1,096	27.753

¹ Exclusive of quarantine.

Number of cases and deaths from diphtheria, scarlet fever, and smallpox in Philadelphia, Pa., from 1868 to 1894, inclusive.

Year.	Diphtheria.			Scarlet fever.			Smallpox.		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
1868		119			224			48	
1869		182			799			6	
1870		172			956			9	
1871		145			262			1,879	
1872		150			174			2,585	
1873		110			319			39	
1874		179			461			15	
1875		652			1,032			54	
1876		708			328			407	
1877		458			379			155	
1878		464			554			6	
1879		321			336				
1880		323			291		1,832	424	23.14
1881		457			486		5,108	1,336	26.23
1882		933			310		1,424	314	22.05
1883	1,006				561		790	173	21.89
1884	680				540		187	35	18.71
1885	600				375		18	3	16.66
1886	411				248		6	4	66.66
1887	416				159		11		
1888	1,170	350	29.91	1,679	235	13.99	366	80	21.86
1889	1,455	375	25.77	2,205	298	13.51	3		
1890	1,820	528	29.01	2,477	189	7.63			
1891	3,251	918	28.23	4,066	341	8.38	16	5	31.25
1892	5,053	1,435	28.39	6,297	485	7.70	4		
1893	3,149	892	28.32	2,849	267	9.37	43	4	
1894	3,150	1,047	33.14	1,922	153	7.96	126	13	10.31
Total	19,057	15,545	29.09	21,495	11,968	9.15	9,934	2,391	24.06

¹ Totals from 1888.

² Totals from 1880.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1301

Number of cases and deaths from diphtheria, scarlet fever, and smallpox in Milwaukee, Wis., from 1877 to June 1, 1895, inclusive.

Year.	Diphtheria.			Scarlet fever.			Smallpox.		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
1877	415	99	23.85	715	171	23.91	540	147	27.22
1878	389	103	26.47	127	26	20.47	86	13	15.11
1879	1,012	212	20.94	120	9	7.50			
1880	886	174	19.63	459	111	24.18			
1881	452	111	24.55	801	142	17.72	12	2	16.66
1882	273	85	31.13	748	55	7.35	42	10	23.80
1883	306	101	33.00	812	88	10.83	1		
1884	230	90	39.13	606	52	8.58	1		
1885	289	120	41.52	462	32	6.92	2		
1886	340	126	37.05	491	22	4.48			
1887	202	71	35.14	478	21	4.39	1		
1888	192	69	35.93	439	45	10.25			
1889	489	135	27.60	548	70	12.59	2		
1890	827	241	29.14	576	31	6.00	1		
1891	1,489	400	26.86	792	86	10.85			
1892	1,193	400	33.52	559	76	13.59	1		
1893	620	209	33.70	526	94	17.85	1		
1894	436	165	37.84	176	12	6.81	894	244	27.29
June 1, 1895	133	46	34.58	56	1	1.78	175	30	17.14
Total	10,173	2,957	29.16	9,501	1,144	12.03	1,759	446	25.35

Number of cases and deaths from diphtheria, scarlet fever, and smallpox in New York City, from 1875 to 1894, inclusive.

Year.	Diphtheria.			Scarlet fever.			Smallpox.		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
1875	4,521	2,329	51.29	1,730	514	29.71	3,397	1,280	34.73
1876	3,471	1,750	50.41	2,406	891	37.03	883	315	35.67
1877	2,328	951	40.85	3,475	983	28.31	48	14	29.16
1878	2,484	1,007	40.53	3,916	1,099	28.06	5	2	40.00
1879	1,783	671	37.63	5,446	1,477	27.12	65	25	38.46
1880	3,307	1,390	45.05	3,048	618	20.27	64	31	48.43
1881	5,196	2,249	43.28	7,104	1,964	27.41	1,338	451	33.70
1882	3,507	1,525	43.48	5,961	2,066	34.64	702	259	36.89
1883	2,096	1,009	48.13	3,825	744	19.45	26	12	46.10
1884	2,223	1,090	49.03	3,262	608	18.63	5		
1885	2,920	1,325	45.37	2,634	559	21.22	98	26	26.53
1886	3,737	1,727	46.21	1,696	371	21.87	109	31	28.44
1887	5,923	2,167	36.58	3,147	589	18.71	343	99	28.27
1888	6,491	1,914	29.47	7,188	1,361	18.93	311	81	26.04
1889	6,489	1,686	25.95	8,849	1,242	14.03	2	1	50.00
1890	4,350	1,262	29.01	3,087	408	13.21	5	2	40.00
1891	4,874	1,361	27.92	7,442	1,220	16.39	21	2	9.52
1892	4,654	1,436	30.85	7,048	977	13.85	378	81	21.41
1893	6,468	1,970	30.45	5,764	551	9.55	464	102	21.98
1894	9,155	2,359	25.70	4,768	541	11.34	770	154	20.00
Total	85,994	30,178	35.09	82,856	19,783	23.87	9,034	2,907	32.84

1302 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Number of cases and deaths from diphtheria, scarlet fever, and smallpox in the District of Columbia, from 1872 to June 30, 1895.

Year.	Diphtheria. ¹			Scarlet fever. ¹			Smallpox.		
	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.	Cases.	Deaths.	Per cent.
1872							305	75	24.59
1873							1,439	537	37.03
1874							7	1	14.28
1875							6	2	33.33
1876							7	1	14.28
1877							4		
1878							1	1	100.00
1879									
1880							77	13	16.89
1881							7	2	28.57
1882							35	15	42.85
1883							10	2	20.00
1884							1	1	100.00
1885									
1886									
1887									
1888									
1889									
1890									
1891									
1892	553	182	32.91	385	26	6.75	1	1	100.00
1893	377	128	33.95	209	7	3.34			
1894	432	172	39.81	239	14	5.85	1	1	100.00
1895	424	121	28.41	657	9	1.36	56	8	14.28
Total.....	1,786	603	33.76	1,490	56	3.08	1,957	660	33.72

¹ From January 1, 1891.

In conclusion, I have to express my appreciation of the uniform courtesy extended me by the honorable Commissioners of the District of Columbia and of the hearty cooperation of the officials of the health department. To Mr. W. H. Stoutenburg, the intendent of the Washington Asylum, the hospital is indebted for promptness in furnishing the necessary provisions for its proper maintenance.

For the employees of the hospital I have no words except those of praise, and their untiring efforts in their ministration to the sick have left a mortality at the Smallpox Hospital which for its smallness leaves a record never equaled in the history of this hospital.

A full inventory of hospital property has been placed in the hands of Mr. Charles H. Pemberton, at the hospital. A glance at it will show equipment sufficient to meet an emergency.

I have the honor to be, very respectfully, your obedient servant,

LLEWELLYN ELIOT, M. D.,

Late Physician in Charge of Smallpox Hospital.

WILLIAM C. WOODWARD, M. D.,

Health Officer, Washington, D. C.

REPORT OF PROF. J. D. HIRD.

HEALTH DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, October 21, 1895.

SIR: I submit herewith a report of the work performed in the chemical laboratory for the fiscal year ended June 30, 1895.

During the year I have made 927 analyses, which may be classified as follows:

Milk.....	545
Water.....	341
Cream.....	21
Examinations for coroner.....	6
Miscellaneous.....	14

Of this number 323 were referred to this department mostly by private parties, and the balance collected by inspectors of the office.

The above number may be still further subdivided and classified as follows:

Analysis of milk collected by this office.....	323
Analysis of milk submitted by private parties.....	222
Analysis of cream submitted by private parties.....	21
Analysis of water from public wells.....	214
Analysis of water from public schools.....	16
Analysis of Potomac water.....	14
Analysis of water from Aqueduct Tunnel.....	7
Analysis of water from private wells.....	90
Analyses of suspected poisons for coroner.....	6
Miscellaneous.....	14

Of the 214 samples of water analyzed from the public wells, 32 were found contaminated and unfit for use, while 10 others were found to be very suspicious.

Thirty-five of the 90 samples of water analyzed from the private wells were likewise found contaminated, while 3 others were regarded as suspicious. Two of the wells connected with the public schools were condemned and 3 others reported suspicious. The 14 analyses made of Potomac water were begun on March 11 and extended to July 1, the average for that period being as follows:

Solids, 110.2; loss on ignition, 45; chlorine, 3.73; nitrogen as free ammonia, 0.013; nitrogen as albuminoid ammonia, 0.0897; nitrogen as nitrites, trace; nitrogen as nitrates, 0.746; oxygen consumed, 2.55 parts per million.

The miscellaneous work of this department has included among others the analyses of butter, wine, coffee, cheese, sugar, and ice.

The work that has been done for the coroner of the District has taken up considerable of the attention of this department, such cases usually requiring protracted investigation.

In this particular it might be well to state that this work has not been as satisfactory as it might have been, owing to the lack of facilities of that office for the proper handling of the subjects, the material for examination usually being furnished this department in tin cans or fruit jars.

and also owing to a lack of facilities in this department for the proper examination of such material. I would therefore recommend that in case it is desirable that this department should continue such examinations for the coroner, that a small additional appropriation be given this department for its proper equipment for such work.

In regard to the waters from the public wells, no attempt has been made to average the results of the analyses of the several sections and thus establish a standard for that locality, as such standards are necessarily erroneous and of no value in judging the character of any particular water.

I have also endeavored as far as possible to avoid reporting waters as "suspicious," a term indicating rather ignorance on the part of the analyst than the actual condition of the water, and I have used such terms in general only where it was my intention to further examine such waters from time to time until its nature so manifested itself that a definite conclusion could be reached. In the majority of such instances this has been done and the report submitted in accordance with the conclusions arrived at.

Of the 323 samples of milk collected and analyzed, 41 were found to be skimmed, 8 watered, and 3 both skimmed and watered. This gives a total of 52 samples, or a little over 16 per cent of the entire number, that had evidently been tampered with. This is, however, considerable improvement over last year, the total adulteration, including skimmed milk, for that year being a little over 31 per cent. It is, therefore, a matter of congratulation that the milk shipped during the past year was on an average 50 per cent better than that supplied the previous year. And still further, the number of prosecutions for the sale of adulterated milk during the past year was also very materially decreased, thus showing the advantages that have accrued to the community from this branch of the service, and also a tendency on the part of the dairymen to live up to the spirit of the law, notwithstanding its infirmities.

Still, there is yet room for improvement both in regard to the quality of the milk that is put forth and also in regard to the method of handling it, and in order that this may be brought about, it is essential that the present law governing the sale of milk within the District of Columbia should be changed in several particulars. This becomes evident when we consider that the law as it now stands requires that the sample of milk taken for analysis shall be taken in the presence of at least two witnesses, thus, as a matter of fact, requiring three inspectors from this office to collect one sample of milk. But even more serious is the defect in the law which requires that the milk taken for analysis shall be poured from one can to another not less than twice before the sample is taken, but fails to provide that the dairyman shall thoroughly mix or stir before serving to his customers. This likewise becomes evident when we consider that in plain view of the inspector the dairyman is allowed to draw skim milk from the bottom of his can with impunity, and serve it to his customers, knowing as he does that the sample secured by the inspector must in consequence thereof be all the richer.

And again, the fact that the law requires that the analyses of samples taken shall be made in the presence of witnesses, without witnesses having been provided for by Congress, makes the law practically of no avail. Such witnesses, even were they necessary, should be inspectors of this office, whose knowledge of chemical analysis should be such as to allow them to give reliable testimony as to that which they had actually witnessed. The law still further allows that the owner or his agent may be one of the witnesses. Is it to be presumed that the

owner or agent, except in exceptional instances, is capable of giving reliable testimony upon a subject of this character?

Section 7 provides that no person shall knowingly have or offer for sale milk containing more than 88 per cent of watery fluid and less than 12 per cent of total milk solids, of which at least 3 per cent shall be fat, thus making it incumbent on this office to prove that the milkman knowingly skimmed his milk. That would at least require detection on our part of the milkman actually so engaged.

It will thus be seen that the present law is entirely inadequate to meet the necessities of the case.

I would, therefore, most respectfully recommend that the law governing the sale of milk within the District of Columbia be so amended or changed as to eliminate the above objectionable features.

And I would further recommend that assistance be given this department for properly inspecting and controlling our milk supply. The inspection of the dairy farms both within and without the District is, in my opinion, an absolute necessity for the prevention of disease.

In order to handle this vast and important work there should be, in addition to the chemist and assistant in the laboratory, at least two inspectors assigned to this branch of the service.

The advantages that would accrue to the community from this increased service can not be estimated, and I would, therefore, respectfully ask that it be given your earnest consideration.

Very respectfully,

J. D. HIRD, *Chemist.*

WILLIAM C. WOODWARD, M. D.,
Health Officer, Washington, D. C.

REPORT ON THE PREVALENCE OF TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

By GEORGE M. KOBER, *Special Medical Sanitary Inspector.*

HEALTH DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, December 2, 1895.

GENTLEMEN: I have the honor to hand you herewith the report of Dr. George M. Kober, special medical sanitary inspector, upon his recent investigation of 500 cases of typhoid fever, selected at random from among those occurring in the District between July 1, 1895, and October 31, 1895, inclusive.

I must express my regret that the men and money at the disposal of this department are so limited that it is impossible to continue this investigation further, the emergency having passed which permitted the employment of a special inspector to be paid from the emergency fund. A health department falls short of its purpose which contents itself with the mere enforcement of the sanitary laws and the recording of vital statistics; it should continually keep watch over local conditions relating in any way to public health, and should investigate new methods in preventive medicine, so as to be able at all times to recommend, or even to adopt, proper measures to do away with unsanitary conditions, and so reduce to a minimum the cases of preventable disease. It should not be compelled to wait until an emergency arises before the money becomes available even to begin an investigation into such matters. Yet such is the position of the health department of this District at the present time. I may add, therefore, to the recommendations contained in Dr. Kober's report another, viz:

That the health department be provided with means for conducting at all times inquiries similar to the present one, extending, however, not only to typhoid fever, but to all preventable diseases.

In view of the sources of pollution of the Potomac River revealed by this investigation, and of the paramount importance of a proper water supply, I am of the opinion that, in addition to the construction of filter beds to remove impurities which can not be prevented from entering the river, steps should be taken to reduce to a minimum the amount of such impurities. I recommend, therefore, that the Potomac basin be surveyed with especial reference to the present and prospective sources of contamination of our water supply, and with a view to adopting whatever measures may be possible to remove and to prevent the recurrence of such sources.

With these additions, and with the statement that improvement of the water supply is equally as important as the extension of the sewer system, the recommendations of Dr. Kober are indorsed by me, and may be accepted as embodying the recommendations of the health department.

Respectfully,

WM. C. WOODWARD, M. D.,
Health Officer.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

HEALTH DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, November 27, 1895.

SIR: In accordance with your instructions, and pursuant to an order from the Commissioners of the District of Columbia, appointing me special medical sanitary inspector, I began my duties in the investigation of typhoid fever September 19, 1895.

As there is no law requiring compulsory notification to the health office of the cases of this disease existing, the only data indicating a greater prevalence thereof than usual were the certificates of death on file in your office, which for the period beginning July 1, 1895, and ending September 18, 1895, amounted to 75, and as the average mortality from typhoid fever is rarely less than 10 per cent, these deaths were believed to represent from 600 to 750 cases during the period mentioned.

The next question naturally arose, Where are the cases, and what are the causes? The certificates of death furnished the address of all except the hospital cases. I visited these institutions and obtained not only the missing information, but also the address of the patients who had been treated there since July 1, which afforded sufficient material to begin my labors. In order to render this inquiry as thorough as possible it was considered of the utmost importance to secure the cooperation of the medical profession, and hence the following circular was addressed to over 700 physicians in the District:

SEPTEMBER 28, 1895.

DEAR DOCTOR: In view of the large number of deaths from typhoid fever which have recently been reported to this department, your assistance is requested in making complete the investigation which is now being conducted to ascertain the causes for the prevalence of the disease and the proper measures to be adopted for its prevention. Will you kindly report on the inclosed cards such cases of typhoid fever as have occurred among your patients since July 1, 1895, or which may occur hereafter? Or, if preferred, will you kindly forward the necessary cards to families in which cases have occurred, with a request that they make the report desired?

Additional cards can be had upon application to this office, and penalty envelopes will be furnished for making the returns, if preferred.

Respectfully,

WM. C. WOODWARD, M. D.,
Health Officer.

The circulars were accompanied by information cards, of which the following is a copy.

TYPHOID FEVER.

WASHINGTON, D. C., ———, 1895.

To the Health Officer, District of Columbia:

I respectfully report the following case of typhoid fever:

Name, ———; sex, ———; age, ——— years; color, ———; location (street and number), ———; date of attack, ———. How many days absent from the city just prior to attack, ——— days. Consumer of Potomac water, yes or no. Consumer of well water, yes or no. Location of well, ———. Name of milkman, ———.

Remarks.

(Signature.)

(Address.)

(An inspector from health department will investigate the case unless otherwise requested.)

PREVALENCE OF TYPHOID FEVER.

Replies were received from 7 hospitals and 135 physicians, reporting, to October 31, 428 cases. Fifty-one physicians, the majority of whom were either engaged in practice limited to special diseases, or retired, replied that they had treated no cases of typhoid fever since July 1.

The health office had on file 90 death certificates signed by the physicians who reported the 428 cases, but as one physician on the list reported only one case of typhoid fever when he had signed three certificates of death from this disease, it became apparent that others were perhaps equally forgetful, and that the material was useless for statistical purposes. The members of the medical profession who systematically reported their cases deserve, however, great credit, as the reports aided me in locating the majority of the cases investigated; but I desire it to be distinctly understood that they afford no indication of the actual number of cases in the city for the four months ending October 31, 1895, and in estimating the number of cases I had to fall back upon a computation of the number of deaths reported to your office, which, for the four months ending October 31, amounted to 149. Of this number four occurred in persons who had been brought to this city for hospital treatment, one in the person of a gentleman from Atlanta temporarily in the city, and in one the residence could not be determined by the authorities of Freedmen's Hospital, leaving a balance of 143 deaths to be accounted for. Assuming that each death represents 10 cases of typhoid fever, there would have been 1,430 cases. If we assume the mortality to have been 20 per cent the number of cases would have been 715. Murchison places the death rate from this disease at 17.45 per cent, which is perhaps none too high for this city during the period mentioned, as 7 of our hospitals treated during the four months 131 cases with 23 deaths, or a mortality of 17.56 per cent.

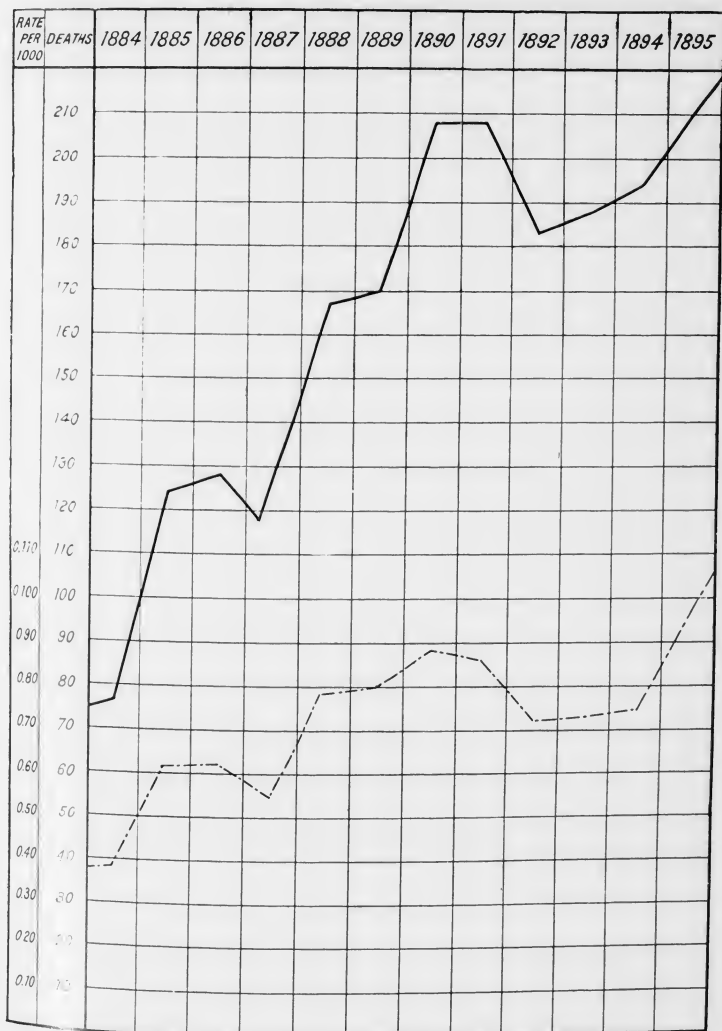
In the United States Army, with a competent corps of medical officers, excellent hospital facilities, and patients in the prime of life to deal with, the mortality for the past five years in 674 cases of typhoid fever was 74, or 10.98 per cent. These data were kindly furnished by Surgeon Charles Smart, of the United States Army, from the official records of the Surgeon-General's Office. In view of all the circumstances, and especially because the majority of the deaths occurred during and after the heated term, when the power of resistance was at its lowest ebb, it is fair to assume that the average mortality was 18 per cent, and that the 143 deaths represented 795 cases of typhoid fever.

It may be urged that a number of the fatal cases were not typhoid fever, but due to malarial or septic diseases. This objection must be met by the fact that, for the purpose of offsetting errors in diagnosis, I have excluded the 8 deaths from typhoid malaria reported to your office, and which, strictly speaking, should be classed as typhoid fever. It is also possible that deaths reported from other causes were really due to typhoid fever, especially as during the four months ending October 31 there were 46 deaths from malarial fevers, as compared with 27 deaths for the corresponding months of the preceding year.

TYPHOID FEVER HAS INCREASED WITH APPROXIMATE UNIFORMITY IN THE DISTRICT OF COLUMBIA DURING THE PAST TWELVE YEARS.

The number of estimated cases, or, if you please, the 143 deaths, points with more than mere suspicion to a very great prevalence of typhoid fever in the national capital. A city or community may at times suffer from a sudden or explosive outbreak, affecting a large number of persons, generally due to a common cause, such as water or milk infection, but since the death rate, as shown by chart No. 1, has increased with approximate uniformity during the past twelve years the causes can not be ephemeral, but must be persistent and largely local. The material rise during the months of July, August, Septem-

CHART IX.—ILLUSTRATING THE NUMBER OF DEATHS FROM TYPHOID FEVER IN THE DISTRICT OF COLUMBIA IN EACH YEAR FOR TWELVE YEARS, FROM JULY 1, 1884, TO DECEMBER 31, 1895 INCLUSIVE, WITH ANNUAL DEATH RATE PER 1,000 OF POPULATION.



— NUMBER OF DEATHS.

- - - RATIO PER 1000.

ber, and October, as compared with corresponding months of preceding years, is perhaps largely due to meteorological conditions, such as prolonged dry weather, low stage of water, and corresponding concentration of impurities, which will be referred to later.

NUMBER OF CASES INVESTIGATED AND RELATIVE FREQUENCY OF THE DISEASE IN DIFFERENT SECTIONS OF THE DISTRICT.

It was deemed desirable to investigate at least 500 cases distributed over different parts of the city, with the hope that the information gained by a personal inspection of the premises and surroundings, condition of the house drains, methods for the collection of fecal matter, together with the results of the inquiry into the water and milk supply, and the antecedents of the cases, whether absent from the city, and the general health of the patient prior to the attack, would furnish valuable data concerning the causation and persistence of the disease. The 500 cases examined by me were distributed as follows:

Locality.	Contracted in the District.		Contracted at summer resorts.	
	Cases recovered.	Fatal cases.	Cases recovered.	Fatal cases.
Reno, Tenleytown, Chevy Chase, and vicinity.....	10	3	1	.....
Washington Heights, Columbia Heights, Meridian Hill, Mount Pleasant, Le Droit Park.....	14	2	1	1
Brightwood and Takoma.....	18	5	.....	.....
Brookland.....	11	.....	.....	.....
Ivy City and Bladensburg road.....	13	6	.....	.....
Gales and Seaton streets NE.....	15	3	.....	1
Anacostia.....	9	6	1	2
Northeast.....	65	24	5	.....
Southeast and southwest.....	48	30	18	1
Central, from North Capitol to Thirteenth street.....	71	21	9	3
Northwest, Thirteenth street to Rock Creek.....	34	9	13	3
Georgetown.....	13	6	2	3
Total.....	321	115	50	14

From the foregoing table it appears that, of the 500 cases 436 contracted the disease at home, and 64, or 12.4 per cent, outside of the District limits. Of these 64 cases I need only say that 63 had been consumers of well or spring water at various summer resorts, 17 of the number having sojourned at Colonial Beach. This fact simply tends to confirm the opinion that the autumnal rise of typhoid fever in cities is to a certain extent influenced by the return of persons from the country, who have contracted the germs of the disease in the rural districts; indeed not a few are actually taken sick there and hasten to their homes for medical treatment. For the purpose of studying the relative frequency of the disease according to population in different parts of the District, I have divided the entire county into six sanitary districts.

The first district, comprising all that part of the city south of East Capitol street and the public grounds, including the southeast and southwest part of the city as far as the banks of the Potomac and the Eastern Branch, with a population of 65,328, furnished 78 of the 436 cases contracted at home, or 11.94 cases per 10,000 of inhabitants.

District 2, east of North Capitol and north of East Capitol streets, with a population of 27,417, furnished 89 cases, or 32.46 cases per 10,000 of inhabitants.

District 3 (central), comprising all that part of the city west of North Capitol, east of Thirteenth street, and north of public grounds, with a

population of 74,408, furnished 92 cases, or 12.36 cases per 10,000 of inhabitants.

District 4, west of Thirteenth street, east of Rock Creek, and north of the river to Florida avenue, with a population of 52,467, furnished 43 cases, or 8.11 cases per 10,000 of inhabitants.

District 5, or what is commonly known as Georgetown, with a population of 17,045, contributed 19 cases, or 11.15 cases per 10,000 of inhabitants.

District No. 6, comprising all other portions of the county not already accounted for, including our suburbs, with a population of 31,950, furnished 115 cases, or 36 cases per 10,000 of inhabitants.

TABLE I.—Statement showing the distribution of 436 cases of typhoid fever contracted in the District of Columbia, with rate per 10,000 of population in each section.

Section.	Estimated population, by section, 1895.	Cases of typhoid fever contracted in the District.	Ratio of cases of typhoid fever to each 10,000 of population in each section.
I. South	65,328	78	11.94
II. Northeast	27,417	89	32.46
III. Central	74,408	92	12.36
IV. Northwest	52,467	43	8.11
V. Georgetown	17,045	19	11.15
VI. County	31,950	115	36

In the location of cases I have been largely guided by the cases reported to the office, but as physicians residing in some sections may have been more faithful than others in reporting their cases there would be a chance for incorrect deductions, and to eliminate a possible source of error it is necessary that we study the distribution of the fatal cases in the same manner.

Of the 143 deaths among residents of the District of Columbia, 14 occurred in persons who had contracted the disease at summer resorts, leaving a balance of 129 deaths to be accounted for, and these deaths were distributed as follows:

TABLE II.—Statement showing the distribution of deaths from typhoid fever contracted in the District of Columbia during June, July, August, September, and October, 1895, with rate per 10,000 inhabitants in each section.

Section.	Estimated population, by section, 1895.	Deaths from typhoid fever contracted in the District.	Ratio of deaths from typhoid fever to each 10,000 of population in each section.
I. South	65,328	34	5.20
II. Northeast	27,417	24	8.76
III. Central	74,408	29	4
IV. Northwest	52,467	9	1.71
V. Georgetown	17,045	6	3.53
VI. County	31,950	27	8.44
Total		129	

Whether we take the number of cases examined by me or the number of deaths reported to the office as a basis to determine the relative frequency of typhoid fever in different parts of the city, the same sig-

nificant fact develops that the disease is more prevalent in the suburbs and in the northeast, in proportion to the population, than in any other part of the city.

A study of this table furnishes ample food for reflection, and the question naturally arises, how to account for this difference.

Before attempting to furnish an answer, it is desirable to recall the various factors which are believed to be concerned in.

THE CAUSATION AND SPREAD OF TYPHOID FEVER.

The majority of physicians hold that the disease is caused by a living germ, belonging to the lowest form of vegetable life and known as the bacillus of Eberth. This microbe has been constantly found in the intestinal discharges, and almost always in the blood and urine of typhoid-fever patients, and in the mesenteric glands, spleen, and other organs of persons dead from the disease. It has been isolated and cultivated in suitable media outside of the body, but a pure culture thus obtained, when introduced into the body of a healthy animal, has not produced the disease in question. Absolute proof is therefore wanting.

It has been shown that these organisms can be cultivated in gelatin, agar-agar, potato slices, also in milk, meat broths, and bread crusts; that they can retain their vitality for a certain length of time in ordinary water, and may even proliferate in certain qualities of water, and that their longevity is materially influenced by the presence of organic nitrogen in the water. Professor Jordan, of Chicago, has recently shown that so small an increment as 0.0126 organic nitrogen (parts per 100,000) causes a perceptible lengthening of the life of the typhoid bacilli. Prudden has shown that they can retain their vitality in ice for 103 days. Grancher has demonstrated that they can develop in soil, and Uffelmann's experiments show that they retain their vitality for a year at least in decomposing fecal matter.

The studies of Rodet and Roux appear to indicate that the bacillus of Eberth is nothing more than a modification of the colon bacillus, a constant inhabitant of the intestinal canal of man and other animals, which may acquire morbid properties outside of the body, and this has opened the question whether the bacteria may be benign in one locality and malignant in another. There are not a few who are disposed to believe that the virulence of disease germs depends largely upon the character of their food and environments, and that soil pollution and other unsanitary surroundings offer suitable conditions for the transformation of harmless into morbid germs outside of the body.

There is nothing strained in this assumption, because we know that climatic conditions and the character of the soil influence the quality of the larger plants and fruits, and why not the lowest forms of vegetable life? All scientific physicians agree, however, upon one point, viz, that typhoid fever is caused by an organized germ capable of reproducing itself within and without the body, instead of such hypothetical matter as miasms or contagia, whose nature has never been demonstrated to our senses. On no other theory except the germ theory can we explain the occurrence of typhoid-fever epidemics, spread through the water and milk supply. If we reject the germ theory we will indeed be forced to the conclusion that fecal and putrescible matter when present in milk or water in infinitesimal dilutions is capable of producing the disease in question. "A poison may produce sickness and even cause death, but it can not infect, because it can not reproduce itself."

According to the advocates of the germ theory a certain number of typhoid bacilli gain admission, we will say, into the intestinal tract, and, if the conditions are favorable, begin to proliferate. It has been estimated that a single germ, by growth and subdivision, is capable of producing over 16,000,000 of similar germs in twenty-four hours. In consequence of their own life's process they produce a soluble poison, which, when absorbed, gives rise to constitutional symptoms, and in addition also acts as a local irritant and causes the lesions in the alimentary canal, characterized usually in the first week by infiltration, in the second week by ulceration, and in the third week by separation of the sloughs.

The intensity of the local and general symptoms doubtless depends not only upon the dose of the fever-producing agent, but also upon the individual susceptibility or rather the aptitude of the organism to feel the effects of the poison evolved by the germs. In this way we get our mild, medium, severe, and irregular types of enteric fever, differing simply in degree, but not in kind.

A mild infection may give rise to abdominal catarrh, with symptoms of catarrhal jaundice and temperature not exceeding 100°. Many of such cases have been observed in which there was enlargement of the spleen, with the characteristic eruption.

Again, there are cases, though quite infrequent in the United States, which have been described as the abortive form, in which somewhere between the seventh and fourteenth day, as Jaccoud expresses it, "the sickness takes a sudden turn and runs a course similar as regards enteric fever to that which varioloid runs as regards variola." Griesinger reports a case where the duration did not exceed five days.

Such cases can only be explained by assuming that the intestinal lesions undergo resolution, and that we simply have to deal with the primary fever, and not with the secondary or septic fever due to the ulcerations and formation of sloughs.

CHANNELS OF INVASION AND MODE OF DISSEMINATION.

The invasion of the microbe most likely takes place through the alimentary tract, as evidenced by the primary intestinal lesion and the frequent dissemination of the disease through the water and milk supply. The possibility of transmission of the virus through the air should not be excluded, for, as in tuberculosis, so in this disease, the infectious material may have become dried and pulverized, and with particles of dust gain access to food, or into the mouth, there to be swallowed or inhaled.

The principal sources of transmission of the microbe, however, are through the water supply and infected milk and food, and there is much reason for believing that in such cases the virus proceeded from the dejecta of typhoid patients, which gained access to the water supply directly or through the soil or the wash water from patients, and infected clothing and bedding, or found its way into vegetables and fruits, which are eaten raw, through the medium of fertilizers or washing them in infected water.

The agency of flies and other insects in carrying the germs from box privies and other receptacles for typhoid stools to the food supply can not be ignored.

MILK INFECTION.

Dr. Busey and myself have tabulated 130 epidemics of typhoid fever from all parts of the world which were traced to contaminated milk.

In 109 instances there is evidence of the disease having prevailed at the farm or dairy.

In 54 the poison reached the milk by soakage of the germs into the well water with which the utensils were washed; in 14 of these the intentional dilutions with polluted water is admitted.

In 6 instances the infection is attributed to the cows wading in sewage-polluted water. In 3 instances the infection was spread in ice cream prepared in infected premises. In 21 instances the dairy employees also acted as nurses. In 6 instances the patients, while suffering from a mild attack of enteric fever or during the first week or ten days of their illness, continued at work, and those who are familiar with the personal habits of the average dairy boy will have no difficulty in surmising the manner of direct digital infection. In 1 instance the milk tins were washed with the same dishcloth used among the fever patients.

WATER-BORNE EPIDEMICS.

I will not weary you with the recital of numerous instances in which the disease has been spread by polluted drinking water.

We have the experience of Plymouth to show that the excreta of a single typhoid patient washed into a stream caused over a thousand cases of this fever. A study of the epidemic at Cumberland, Md., in 1889-90 indicates that typhoid fever was not present until the discharges from a case living on one of the little runs which empties into the Potomac about 200 feet above the pumping station found their way into the city water supply. Such instances could be recited by the hundreds.

Helwig reports an outbreak at Mayence in 1884 which was traced to the use of artificial seltzer water, the water having been obtained from a well polluted with typhoid dejecta.

Breumer presents the medical history of a farm, showing for twenty-four years the occurrence of typhoid fever, sometimes amounting to an epidemic. During a similar outbreak in 1886 he examined the drinking water, which, though clear and odorless, contained 20,000 germs per teaspoonful, among other fecal or intestinal bacteria.

Such instances are by no means infrequent, and this report will deal with a large number of infected wells in our own city.

An outbreak of typhoid fever at Hirschfelden in 1885 was limited to persons using the water from a well in the vicinity of which the mother of a typhoid patient had been washing the soiled linen and bedding of her son.

INFECTED CLOTHING.

Gelan reports an epidemic which renders it probable that the disease may be communicated by means of infected clothing. A German artillery regiment, with an average mean strength of 353 men, between the years 1873 and 1884 furnished not less than 146 cases of typhoid fever. The water supply was above suspicion. Disinfection of the quarters and even abandonment of the barracks failed to check the disease. This finally led to the suspicion that the clothing might be the source of infection, especially as the garments were promiscuously worn. Examination revealed the presence of fecal spots in a number of pantaloons. The clothing was now disinfected, after which only three mild cases appeared, and these were confined to the men engaged in the disinfection.

INFECTED HANDS.

There are of course a number of instances on record in which the disease was contracted by washerwomen, nurses, and persons engaged in the removal of night soil containing typhoid stools, and the most probable explanation is that in the majority of these cases the virus was conveyed to the mouth by means of infected fingers.

Professor Finkler of Bonn, a very competent observer, believes that the disease may be communicated by intimate contact, living in the same room, or breathing the same air, and accounts in this way for a number of outbreaks in his section. In 1886 a woman who had been called to one hamlet to nurse her children, returned to her home, was taken sick with typhoid fever and communicated the disease to her nurse, and subsequently 50 other cases developed which could not be traced to soil pollution or infected water. From this locality three children were admitted to the hospital at Bonn; here four persons were attacked who had come in direct contact and five washerwomen who had come into indirect contact, i. e., through the clothing and linen of the patients. I have found similar instances in my present investigation, but it is practically impossible to say whether in these cases the germs were conveyed through the fingers, or through the air, or by means of flies infecting the food.

Pfuhl, a German military surgeon, has recorded an observation which renders it probable that typhoid fever may be contracted by bathing in polluted streams.

INFECTED SEWER AIR, ETC.

It is not impossible that the inhalation of putrid gases emanating from infected sewage may cause typhoid fever. At all events, Hueber reports an outbreak in the barracks of Ulm traced to the noxious exhalations of privy vaults. Swete attributed an extensive epidemic at Kidderminster to the inhalation of sewer air, and the late Sir George Buchanan described an epidemic at Croydon in 1875 due to the entrance of air from unventilated sewer pipes into the houses of those attacked, and I have seen instances in this city where defective house plumbing and the occurrence of typhoid fever were coincident. There are not a few who assert that the danger from sewer air has been overrated, and adduce experiments upon lower animals tending to show that they can breathe such air for days and weeks with impunity; but rats, mice, and guinea pigs may flourish in an air where man would find it difficult to exist, and there is as much reason for assuming that the germs of typhoid fever, when present in stagnant sewers or in the soil, may be liberated and infect the air as there is for believing that the germs of malaria are carried from the soil by the ascending currents of the air.

Such instances are too numerous to be simply ignored, and certainly justify the inference that sometimes the expired breath of typhoid patients and emanations from sewers, cesspools, and polluted soils may serve as channels for the transmission of the germ.

SEASONAL DISTRIBUTION OF TYPHOID FEVER

Typhoid fever is most prevalent and gives the largest mortality in the late autumn months. In England the disease begins to increase in August and attains its maximum late in October, from which point it gradually falls. If temperature and moisture of the soil have any connection with the rise and fall of enteric fever we can readily understand that the season of its greatest prevalence varies in different

CHART VIII.—ILLUSTRATING THE MONTHLY MAXIMUM AND MINIMUM PREVALENCE OF TYPHOID FEVER IN THE DISTRICT OF COLUMBIA, AS SHOWN BY THE DISTRIBUTION OF 1,693 DEATHS IN THE TEN YEARS FROM JULY 1, 1885, TO JUNE 30, 1895.

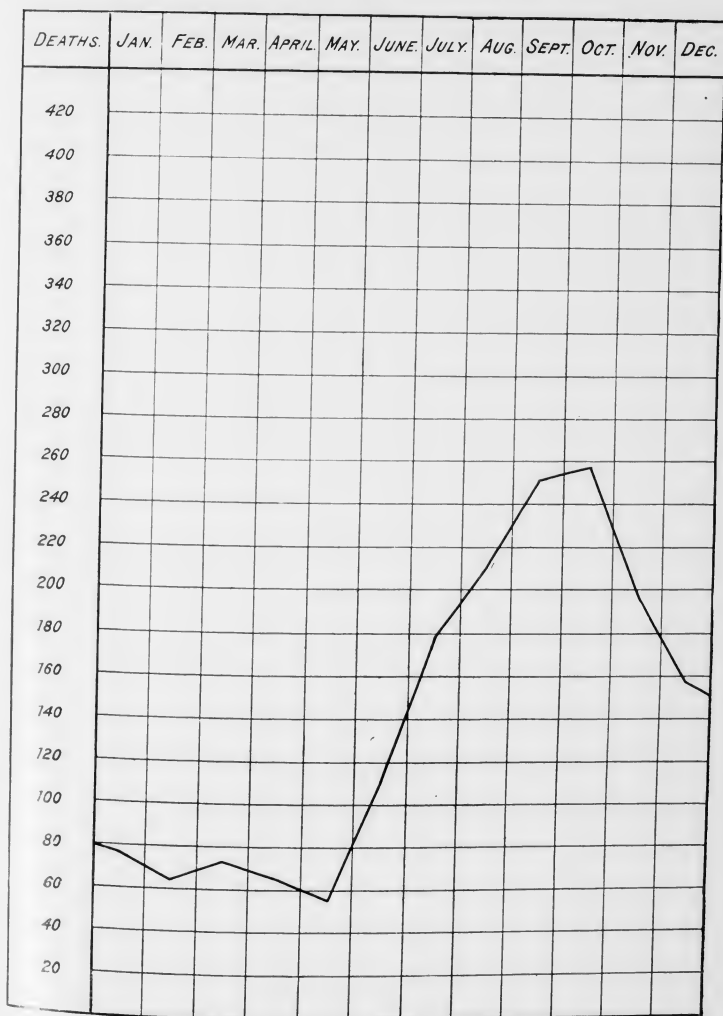
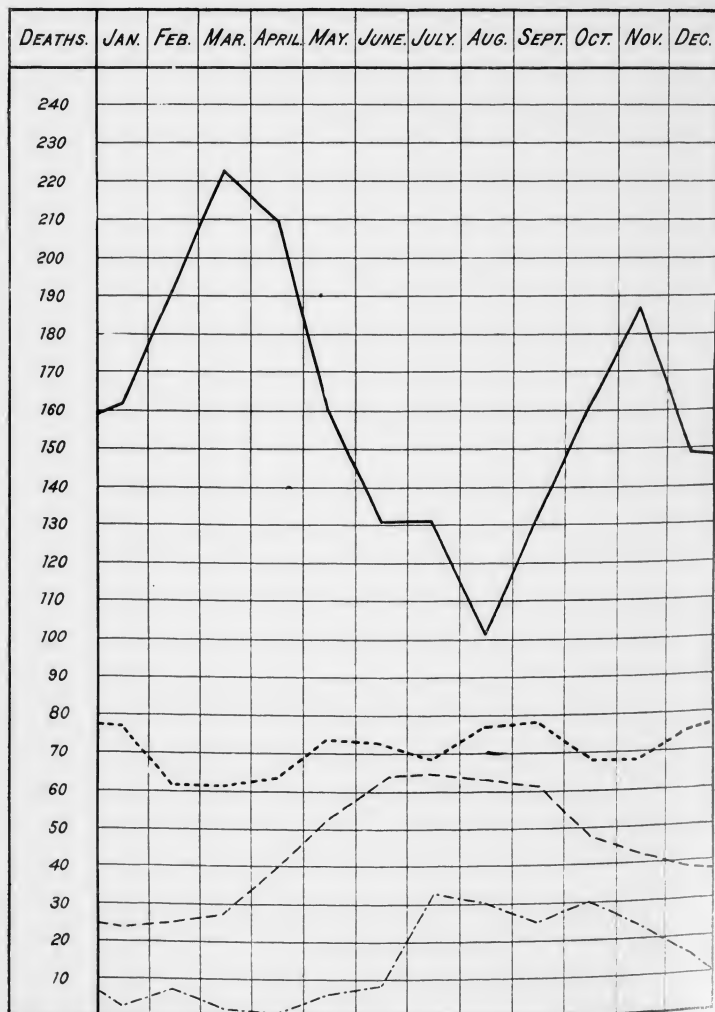


CHART VII.—SHOWING THE MONTHLY NUMBER OF DEATHS FROM TYPHOID FEVER; ALSO THE MEAN RELATIVE HUMIDITY, THE MEAN DEW POINT, AND THE TOTAL MOVEMENT OF THE WIND, DURING THE YEAR ENDED JUNE 30, 1895.



- — — — — DEATHS FROM TYPHOID FEVER. (MONTHLY TOTALS)
- · — · — · — RELATIVE HUMIDITY (MEAN) - DEGREES.
- - - - - MEAN DEW POINT - DEGREES.
- TOTAL MOVEMENT OF WIND IN EACH 24 HOURS. (MEAN)

localities. Chart No. 2 shows that in this District this disease generally begins to increase in May and gradually but steadily attains its maximum in October. Numerous observations indicate that hot, dry summers tend to aggravate the intensity of the autumnal rise, and as this is quite general it would appear that a high temperature favors the proper development of the virus in stagnant sewer deposits or polluted subsoils. But apart from this, and perhaps more essential, is the fact that a dry summer plays an important rôle in the rise and fall of the ground water. Pettenkoffer and his school believe that the virus originates and develops in the soil and is carried into the air by emanations, and that a fall of the ground water is followed by an increase and a rise of the subsoil water by a decrease in the number of cases. The opponents of this theory hold that the germs of the disease in consequence of soil pollution are there, but may remain innocuous, as long as they are submerged in water; that with the recession of the ground water the warm air of July and August enters the deeper layers of the soil and stimulates the organisms into activity, and that the soil is therefore a medium for their propagation and transference into the water supply. The rise and fall of the ground water is believed to play a rôle only in so far as it affects the amount of heat, air, and moisture essential for their growth, and that a fall of the subsoil water would naturally favor their transport into wells. When the stage of the water is low the wells also drain a larger area; this means increased chances for contamination, and if the germs are already present, it certainly means concentration of impurities and larger doses of the fever-producing poison.

PREDISPOSITION.

In addition to the germ there must also be a suitable soil for its proliferation in the system, and this individual predisposition or vulnerability, which renders the body more liable to be acted upon by the germs, may be the result of debility, faulty nutrition, fatigue, excesses of all kinds, abrupt changes of temperature, impure air, mental depression, unwholesome food, and many other factors calculated to diminish the power of resistance in the individual. But, after all, there is a vulnerability which has not been satisfactorily explained, for many persons fall victims to the disease who are apparently healthy and robust at the time of the seizure, and in whom, perhaps, the contents of the alimentary tract offer a suitable medium for the proliferation of the germs.

Having thus sketched the causes and modes of dissemination as generally accepted by the profession, let us see in how far they are applicable to our own city and county, beginning with a consideration of

THE CAUSES OF TYPHOID FEVER IN THE SUBURBS.

I have examined in the suburbs 122 cases, 7 of which were contracted at summer resorts, leaving 115 cases to be accounted for.

TENLEYTOWN, WESLEY HEIGHTS, RENO, CHEVY CHASE, ETC.

Most of the 13 cases investigated by me in this section were found in the homes of the poorer classes, where wells and privies have been dangerous neighbors for years, and although the law compels the use of properly constructed box privies, I have still encountered the most primitive forms of outhouses. In one instances there was not even a pit, but the ordure was deposited upon the surface, about 40 yards

from the well, in a spot favorable for percolation. The family occupied one of the most commanding heights at Reno, and are evidently only tenants of what promises to be valuable real estate. The soil is very porous, and the surface drainage is excellent. Upon inquiry as to what disposition had been made of the stools of the patient, the mother pointed out a spot where they had been buried—with the best intention, of course—to render them innocuous, but perhaps only to contaminate a spring distant about 200 yards, and we will never know how many people who partake of this spring will be infected when sufficient time for percolation shall have taken place. The pernicious habit of burying the discharges from typhoid-fever patients without previous disinfection, under the impression that it is the best method of preventing contagion, is very widespread and by no means confined to the ignorant classes. If they had been properly disinfected, no harm could result, but, as it is, the germs are there, soil pollution has taken place, and this means sooner or later water pollution.

In another instance, a family residing in a depression near Loughboro road had three cases between July 11 and August 13. The milk supply was above suspicion, but all had consumed water from a well which was liable to pollution from a surface privy. This outhouse is located upon a slope with drainage in the direction of a small stream, which in turn may contaminate some distant spring or well. The family having passed through the sickness might reside there for years without perhaps another case, but, considering "the house unhealthy," they have removed, and thus made room for other tenants to be attacked.

In another family with 2 cases of typhoid fever, the water was obtained from a well located within 24 feet from a leaky box privy, with most unsanitary surroundings in the yard and abundant evidence of soil pollution. In another instance the well was located only 18 feet from a leaky box privy. The patient, a young colored woman, was brought to the city for treatment, and died at Snow's row, in the northwest.

Of these 13 cases, 10 were exclusive consumers of well water, and 3 used both Potomac and pump water.

The 13 houses were supplied as follows: Box privies in good condition, 8; box privies in leaky condition, 3; surface privies, 2.

Fatal cases, 3—white 2, colored 1.

WASHINGTON HEIGHTS, COLUMBIA HEIGHTS, MOUNT PLEASANT, LE DROIT PARK.

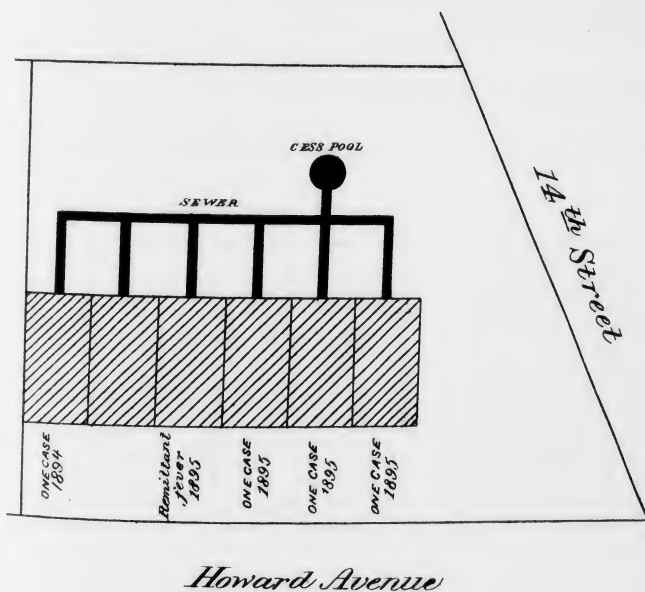
Of the 18 cases examined by me in that section, 16 were contracted at home and 2 at summer resorts.

Many of the houses have sewer connections, and are no longer suburban in that respect, but as they are outside of the boundary limits, and are undergoing a transition stage from suburban to city homes, they have been included here. The occurrence of several cases of typhoid fever in Nos. 1403, 1405, and 1407 Howard avenue is of special interest. These houses, with three others in the same block, had no sewer connections prior to October, 1894, and all the house drainage was carried by pipes to a cesspool in the rear of premises No. 1405. Typhoid fever prevailed among the inmates of house No. 1413, with a fatal case during the year ending June 30, 1894. The dejecta were presumably thrown in the closet and reached the cesspool, which in the fall of 1894 was covered up with earth. In July of the present year a case of typhoid fever developed in house No. 1403, another case residing in 1405 developed shortly after the arrival of the family at Ogdensburg, N. Y., 2 cases developed in house No. 1407 and a case of remittent fever of 5 weeks' duration in house No. 1409. (See plat 1.)

PLAT NO. 1.

- showing -

TYPHOID FEVER
CASES.



THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS
1900



There is no evidence to connect these cases with contaminated wells or the milk supply, and the occurrence of typhoid fever in the same block of houses during last year and of the cases in adjoining houses nearest the infected cesspool this year, points to the latter as a probable source of infection, and we are obliged to assume that, with the recession of the ground water, the air penetrated the deeper layers of the soil, and that the germs were carried up by the ascending currents of the ground air either directly into the air or to the surface of the soil, from whence they were liberated and with pulverized dust gained access to the system. Of course, we have no definite proof of such an occurrence, however probable I might think it to be.

The case on Messmore avenue occurred in a house with very unsanitary surroundings, since all of the houses in that square bounded by Huron and Erie streets are still supplied with box privies and surface drainage, both creating intolerable nuisances during the heated term.

The 3 cases on Sheridan avenue occurred in houses supplied with box privies and wells in the yard. A case occurring on G street in the extreme northwest was also traced to one of these wells. A fatal case, a consumer of this particular water, was characterized by Dr. Forwood, U. S. A., as very malignant from the onset. Still the bacteriological examination of the water proved negative.

Of the 16 cases, 7 were consumers of well water, 7 were consumers of Potomac water, 2 of cistern water. Three of the consumers of well water also drank Potomac water.

Water-closet in house, 8; water-closet in yard, 4; box privy in yard, 4.

Two fatal cases, both white.

BRIGHTWOOD AVENUE AND TAKOMA PARK.

I have examined 23 cases in these suburbs, 18 of which occurred at Takoma Park. This suburb is delightfully situated on elevated ground, with excellent surface drainage and a dry, porous soil, affording splendid building sites for healthful homes provided soil pollution had been prevented, but, as elsewhere, so here, we find that privy sinks and wells have been dangerous neighbors, and as many of the cesspools were mere excavations or holes in the ground, receiving not only fecal matter but also drainage from the houses, we need not be assured that they were preferred to the present box privies, because "they never needed cleaning." I understand that up to 1893 these cesspools were in common use, and, according to the graphic report of Mr. O. T. Beaumont, sanitary inspector, some are still in existence. This, together with a custom, quite common even now, of burying the contents of the box privies upon the premises, has doubtless resulted in a gross form of soil pollution, and converted otherwise healthful building sites into veritable hotbeds for disease germs, and all that was needed was the introduction of the specific germs from a case of typhoid fever. All this is to be regretted, because the guilty parties frequently escape, while families willing and anxious to obey the ordinary laws of cleanliness suffer from the misdeeds of their neighbors. This is rendered painfully apparent by the medical history of a family who resided on Maple avenue in southeastern Takoma for eight years, enjoying good health until August, 1894, when the first case of typhoid fever developed.

In July of the present year a son was taken sick, and since then seven other members of the family. One of these, hoping to escape, went to Massachusetts, and was taken sick shortly after her arrival. In the meantime three other cases occurred in a family residing in a different part of Takoma, who had drank water from the well and

received their milk supply from this house, and still another case developed in a gentleman who received his milk supply there, but even in this case it was fair to assume that the germs were conveyed by washing the utensils and milk pans with the infected well water. I made an inspection September 22, and from the topography and nature of the soil it was at once apparent that the premises and well, occupying a rather low ground, received the drainage from several blocks of houses. The next step was to discover the source of a specific contamination of this well. From the cleanly habits of this family and the statement of the physician in charge it appeared highly improbable that the case from last year was the source of infection, as the dejecta had been properly disinfected and disposed of; but two other possible sources were discovered, viz: In the summer of 1893 typhoid fever prevailed in the premises on lot No. 4, indicated on plat No. 2; also two cases on lot No. 1. Both houses were supplied with wells, the trend of the land from lot 4 being toward lot 1, and the drainage from the latter is decidedly in the direction of the well in question. These premises prior to 1893 had privy sinks or cesspools. Now they are supplied with box privies, but lot 1 also has a water-closet in the house, and the contents with other drainage is discharged into the soil about 300 feet west of the well of this unfortunate family. The house on lot 1 had a mild case of typhoid fever in July of the present year, and although it is claimed that the water-closet is not used, I found it to be in working order when I emptied the flushing tank.

As a second source, I found a 24-inch sewer which discharges upon the surface into a depression directly in rear of premises southeast corner of Maple and Carroll avenues, and about 700 feet north of the well referred to; after rains the contents of this sewer are of course washed farther down. This sewer carries the drainage from several houses indicated on the plat. One of these houses had a case of typhoid fever in 1894, shortly before the case in the house under consideration. The general facts warranted the conclusion that the well had been exposed to contamination both from the north and west sources described. In any event I considered this well infected, and confidently expected that a bacteriological examination would demonstrate the presence of the specific germs, and so expressed myself to Dr. J. J. Kinyoun, of the Marine-Hospital Service, who conducted the examination. You can readily imagine my surprise when this accomplished bacteriologist informed me that the water presented for examination September 22 was free from specific bacteria, and since that time he has examined three more samples at different intervals with the same negative result. I felt a source of bitter disappointment that a method of reasoning based upon observed facts could not be confirmed by bacteriological proof. Fortunately for science, the family had sent a specimen of the water five days before to the Army Medical Museum, and in that specimen fecal bacteria were found, as shown by the following letter:

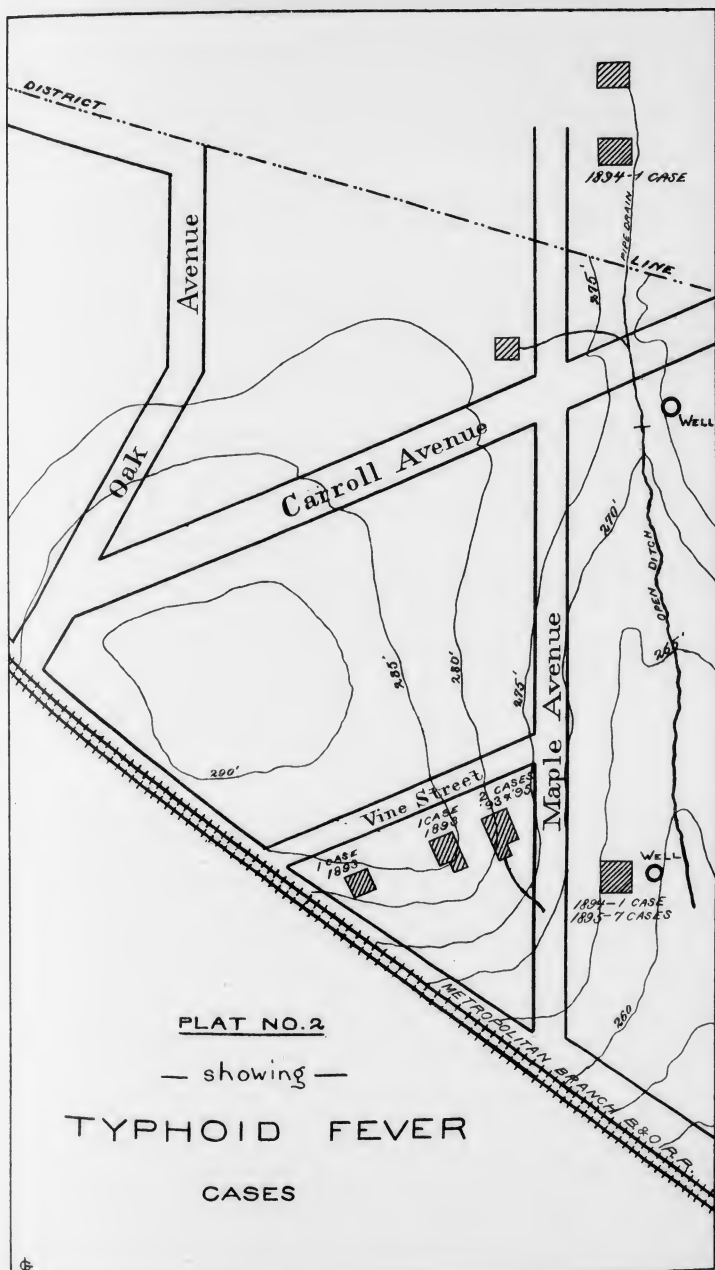
WAR DEPARTMENT,
SURGEON-GENERAL'S OFFICE,
U. S. ARMY MEDICAL MUSEUM AND LIBRARY,
Washington, D. C., September 26, 1895.

"DEAR DOCTOR: The sample of well water left at this laboratory on September 17 by Mr. L., of Takoma Park, and said to have come from the well of Mrs. P., of Maple avenue, Takoma Park, has been examined bacteriologically and found to contain colonies of the bacillus coli communis.

Very respectfully,

WALTER REED,
Surgeon, U. S. Army, Curator.

Dr. WILLIAM C. WOODWARD,
Health Officer, District of Columbia, Washington, D. C.





I will simply add that although Dr. Reed examined additional specimens of this water later, he did not find the colon bacillus except in the sample taken September 17, thus not only confirming the correctness of their independent labors, but also the interesting fact, long suspected by sanitarians, but never so completely demonstrated, that a well may be infected at one time and all evidence disappear a week, a few days, or a few hours later.

The results of the second examination made by Dr. Reed are shown in a letter dated October 28, and addressed to Dr. Charles G. Stone, of Brightwood, D. C.:

About three weeks ago I sent a messenger, as requested by you, to procure water from Mrs. P.'s well at Takoma Park. The water was received in two sterilized flasks, and brought at once to the laboratory, where it was not only promptly plated, but ten different specimens of the water were subjected to Parietti's test for the typhoid organism. Since that time we have carefully followed out the identification of all colonies appearing, and I am compelled to report to you that this examination not only does not show the presence of any typhoid bacilli, but we have not perceived any colonies of colon bacilli.

Two other cases occurred in boarders of a family who used water for household purposes from a well located about 100 feet from the outlet of the 24-inch sewer (see plat No. 2). One was taken sick July 10, treated at the Sibley Hospital, where he died, while his daughter, who had gone to New Hampshire, was taken sick there about the same time, and also died August 1.

Two cases occurred among consumers of a contaminated spring, located in a depression between Spring, Oak, and Chesnut streets and the Baltimore and Ohio Railroad, and the mother of one of these patients contracted the disease while nursing her son.

Of the 23 cases—all white—at Brightwood avenue and Takoma Park, there were 6 deaths. All have been consumers of well water; 8 had drunk both well and Potomac water; 11 were traced to the well repeatedly referred to.

Box privies, 20; water closets in yard, 3.

BROOKLAND.

I have examined 11 cases at this suburb; all but 2 of these could be traced directly to infected wells; 1 of these was located in a depression near the University station, and the other on the sidehill of private premises on Bunker Hill road, between Seventh and Eighth streets (see plat No. 3). A case of typhoid fever occurred on Lowell, between Seventh and Eighth streets, June 18, 1895. The father, hoping to prevent contagion, buried the dejecta, the slope and character of the soil favoring percolation toward the wells in question. The next case occurred in consumers of water from these wells July 15, 18, 20, 25, August 1 and 2, and a secondary case in one of the houses September 1.

The two other cases occurred in one of the seminaries among consumers of Potomac water; none of the 11 cases proved fatal.

Consumers of well water, 9; consumers of Potomac water, 2; box privies, 9; water-closet connected with cesspool, 2.

As the evidence pointed strongly to the contamination of the wells (see Nos. 17 and 95), I recommended their temporary closing, and the result of the bacteriological examination proved the wisdom of this precaution. I also recommended a house-to-house inspection to determine the number of cesspools, the disposal of refuse, the condition of privy boxes and stables, and their relation to wells. The fact that quite a number of houses were supplied with water-closets and house drains whose contents were discharged upon the surface, together with

reckless disposal of garbage and slops, impressed me as formidable causes for soil pollution in a locality which, like Takoma, was favored with very porous soil.

The result of this inspection will be seen by reference to the report of Sanitary Inspector O. T. Beaumont. (See Appendix B.)

IVY CITY AND BLADENSBURG ROAD.

I have examined 11 cases at Ivy City and 8 on Bladensburg road. In the former suburb there are no sewer connections. The cases occurred in eight different houses; seven were supplied with box privies, four of which were found in a leaky condition, and one house had no privy in any shape, the dejecta having been thrown upon a vacant lot in rear of the premises.

Five of the patients had drunk water from Bennett's well, 3 from Cleveland's well, 2 from an underground cistern, and 1 from a surface spring. The cistern, as also Cleveland's and Bennett's wells, were liable to contamination from leaky box privies, and sewage bacteria were demonstrated in the cistern water and some of the wells. (See Dr. J. J. Kinyoun's report, No. 49, 50, and 57.)

Fatal cases, 3—white, 1; colored, 2.

All of the cases on Bladensburg road and vicinity, except those on Lewis street, occurred in houses supplied with box privies. It was admitted that the stools from typhoid patients residing on Bladensburg road were thrown upon the ground without disinfection, and, as the drainage from these houses is in the direction of Trinidad avenue and King street, the residents there were exposed to infection. There is abundant evidence of unlawful surface pollution, and stagnant kitchen slops may be observed on Trinidad avenue in a number of places, and as the germs find a suitable soil in such surroundings it is possible that the flies which abound wherever surface pollution exists may carry the germs into the houses and contaminate the food or drink. The first cases occurred on Bladensburg road July 2. A little girl from S street NW. visited one of the infected premises on Bladensburg road, remained several weeks, and was taken sick there. There was nothing in common in the milk supply of the different houses, and, as there was no well liable to contamination from the first source, it is not improbable that the infection was conveyed in the manner indicated.

All of the 8 persons were consumers of Potomac water; 4 had taken both well and Potomac water.

Fatal cases, 3—white, 2; colored, 1.

SEATON, GALES, NINETEENTH, AND TWENTIETH STREETS NE.

Reference to Map I will reveal quite a group of cases in this section. Not less than 18 cases were contracted there, 3 of whom resided in other parts of the city, but received their milk from this locality.

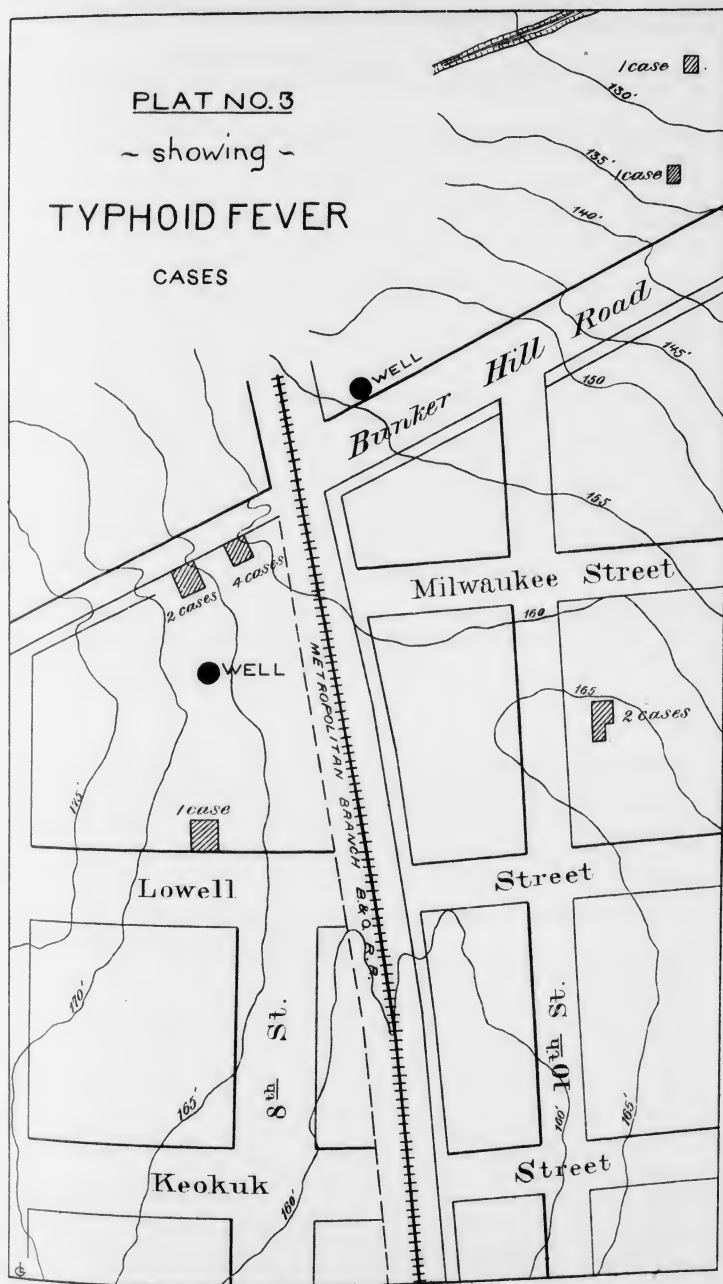
Two sources for this unusual prevalence of typhoid fever were discovered, and it is difficult to say which of the two has contributed the largest quota of cases. Typhoid fever has prevailed in this locality in previous years. The first case this year occurred at 2007 Gales street, almost directly north of a pump located at 2020 Seaton street, which supplies the water to nearly all the houses on Gales and Seaton between Twentieth and Twenty-first streets. At least 11 of the cases were exclusive consumers of water from this well. The houses are all supplied with box privies, many of which were found in a leaky and unsanitary condition. The families admitted that they had buried the dejecta

PLAT NO. 3

~ showing ~

TYPHOID FEVER

CASES





on the commons in rear of their premises, and I regret to say that in one instance this was recommended as a preventive measure by the attending physician.

As the bacteriological examination of the water revealed the presence of fecal bacteria, contamination from this source may be fairly assumed.

One case occurred at 710 Twentieth street NE., where I found an overflowing barrel, instead of a privy box, within 20 feet of the well. Bacteriological examination of this water by Dr. Kinyoun also revealed the presence of intestinal bacteria. Other cases on Nineteenth street received water or milk from infected premises.

Another and perhaps equally fruitful source of infection is the fact that many of the residents keep milch cows, which are permitted to roam at large over the commons and graze along the banks of a sluggish stream which receives the contents of the large boundary sewer. I have seen a herd of fourteen milch cows wading in this polluted stream, and it is perfectly conceivable that the germs of typhoid fever, if present in sewage, may adhere to the teats and udder of the cow, and thus contaminate the milk supply. Several cases in the city, one in the central portion, were traced to milk from this infected locality. The proximity of the houses to the open sewer and the low and marshy character of the ground may have acted as predisposing factors, as many of the victims have been suffering from malarial infections, but the various sources combined I believe fully explain the unusual prevalence of typhoid fever in this circumscribed locality.

All the cases referred to were consumers of well water, 6 only having drunk Potomac and well water. All the houses were supplied with box privies, none having sewer connections.

Three fatal cases, all white.

ANACOSTIA.

I have examined 18 cases in that section, 3 of which were contracted elsewhere. The 15 cases were distributed over different localities, such as Hillsdale, Congress Heights, Morris road, and Anacostia proper; many of the cases were a mile apart, and no two cases could be traced to a common cause, but the old story of contaminated wells and soil pollution must be invoked to explain the occurrence of the majority of the cases.

The cases occurred in houses supplied as follows: Water-closets in yard, 2; box-privies, 10; surface privies, 3.

Thirteen were consumers of well water; 2 were exclusive consumers of Potomac water. A case at No. 10 Minnesota avenue is of interest. The family occupies one of a number of frame houses, all depending for their water supply upon a well in rear of No. 9. This well, in my judgment, is liable not only to gross surface pollution, but also to specific infection from the case of typhoid fever, as the mother of the patient pointed out a spot not over 30 feet from the well where she had buried the dejecta. The biological examination of the water proved the presence of sewage bacteria. I have cautioned the people not to drink the water without boiling it, but the proper remedy would be to close the well before other cases are developed. There are doubtless a large number of unlawful privies in Anacostia. I found such a pit upon the premises of a respectable family occupying a rather elegant house, and the owner informed me that the rats consumed the ordure, as he had watched them in their unsavory occupation; forgetting,

however, that these same rats make burrows, and are thus liable to poison not only his own, but also his neighbor's well. (See Nos. 37 and 38, Dr. Kinyoun's report.)

SUMMARY.

If we group all the cases in the suburbs, we find that the 115 cases occurred in 110 houses, supplied with methods for the disposal of excreta as follows: Water-closets in yard or house, 18; water-closets connected with cesspool, 2; box privies, 86; surface privies, 3; no privy, 1.

Of the 115 cases, 92 were consumers of well water, 17 were consumers of Potomac water, 4 were consumers of cistern water, and 2 were consumers of spring water. Twenty-five consumers of well water had also taken Potomac or spring water.

I have purposely devoted much space to a presentation of the facts as observed in the suburbs, because what is true of them now was under like circumstances true of other parts of the city. Before the existence of sewers in the District there were box privies, many of which are still in use even when leaky or full to overflowing, and before the era of box privies there were sinks and cesspools, and therefore ample opportunities for soil pollution to have taken place.

Under such circumstances we need not be surprised to find in the majority of well waters an excess of the chlorides, which, unless due to marine deposits, are the invariable accompaniment of animal pollution.

Sufficient evidence has been adduced to show how the germs of typhoid fever may be conveyed from the intestinal tract to the soil and from the soil back to the system, chiefly through the water supply, not excluding, however, the rarer instances of transmission alluded to. Soil pollution and contaminated water, however, must be regarded as the most potent factors to account for the relative frequency of this disease in the suburbs.

CAUSES OF TYPHOID FEVER IN THE NORTHEAST.

I have examined 94 cases in the northeast section, of which 5 cases were contracted at summer resorts. Reference to the map indicates that some of the cases are grouped in certain squares, suggesting either the existence of local causes or the possibility that they had followed the routes of certain milkmen. The latter explanation must be excluded, as there was nothing in common in the milk supply in the majority of cases. In my investigation the fact soon developed that there was a decided incident between typhoid fever and the consumers of water from certain wells, and the malignancy of the cases appeared to depend upon the amount of water consumed; in many of the fatal cases the patient had drank a great deal of pump water, and a number died within a week or two after the attack, showing intensity of the poison.

WELL, CORNER OF FIRST AND K STREETS NE.

Twenty-two cases, 8 of which were fatal, were consumers of water from this well. This would be a terrible mortality, and while I am sure that I investigated all the fatal cases, I can not be certain that all the recoveries came under my observation. The pump is located 64 feet from a sewer (the streets are unpaved, maple trees on K street), and as fecal bacteria were demonstrated by Dr. Kinyoun in two samples of the water taken at different intervals, infection of the well may be fairly assumed. In spite of such evidence it is a very difficult matter to con-

vince the average layman that a clear, sparkling, and very palatable pump water can, and very generally is, liable to the gravest form of pollution; he knows from observation that the Potomac water is at times loaded with sediment, and that it often reaches in summer a temperature of over 80°, which is far from palatable to the poorer classes who can not afford to buy ice, and of course he does not know that well water in its passage through the soil has been deprived of suspended matter without losing some of the most dangerous properties. Many of the public wells are liable to sewage pollution, nor need we wonder when some of them are actually only within a few feet from a sewer which, either by means of defective construction or defective joints from house drains, allow the intrusion of tree roots, and thus furnish an opportunity for leakage. But soil pollution may have taken place years before, and there are cases, like those of Metcalf in Ireland and Dr. Low's case of Helmsley, in which the specific virus must have remained latent for years until some change of environment called it again into a state of activity.

Uffelmann has shown that the germs of typhoid fever may retain their vitality for at least a year in decomposing fecal matter. If for a year, why not for a longer period? The infective properties of a given pump water depend of course upon the presence of the specific germs. There are, however, good reasons for assuming that the germs of typhoid fever may be present at one time and not at another. Take, for instance, a pump located near a leaky sewer or house drain. The dejecta have been thrown into the closet at a certain time, and pass the leaky spot in a given time. If the well is full to its average depth the germs may pass beyond the radius drained by it; while if the water is low, the conditions are favorable for admission. But even after the germs have gained access to a well, they are not likely to remain there, as the water is constantly pumped out and replenished from the subterranean waters; hence it is evident that wells may be pure one minute and infected the next, and the specific germ may again be absent in a day or two, so that even the result of a bacteriological examination may mislead us. Fourteen consumers of the water from the pump, corner K and First streets NE., were also consumers of Potomac water, but as a rule during the hot weather preferred the pump water.

The infected houses were supplied as follows: Water-closets in house, 10; water-closets in yard, 4; box privies, 8—three of the latter found in a leaky or overflowing condition.

Fatal cases, 8—white 5, colored 3.

WELL, CORNER SECOND AND G STREETS NE.

A group of 12 cases, 6 of which were fatal, was found in consumers of water from this well, located within 11 feet from a sewer (asphalt pavement and sycamore trees), but both the bacteriological and chemical examinations furnished no proof of the contamination of the water. When we recall the various factors likely to influence the presence or absence of disease germs, I can only say that, while their presence would be absolute proof of infection, their absence in a given sample of water is no indication that they were never present.

Of the 18 cases, 11 were exclusive consumers of this pump water, and 7 were also consumers of Potomac water.

Water-closet in house, 1; water-closets in yard, 15; box privies, 2.

Fatal cases, 6—white 5, colored 1.

WELL, CORNER FOURTH AND E STREETS NE.

Five cases were traced to this well, which is located 15 feet from a sewer (maple trees in vicinity; asphalt pavement on E street; gravel road on Fourth street). The cases occurred in five different houses, supplied as follows:

Water-closets in house, 2; water-closets in yard, 2; box privy, 1.

Deaths, 2—white 1, colored 1.

Two of the above cases occurred on Groff street, where the emanations from the sewer were very offensive. In a case on Acker street (square 861), the cesspool in the yard had been overflowed for three weeks prior to the attack. (See Dr. Kinyoun's Table No. 1.)

WELL, CORNER ELEVENTH AND F STREETS NE.

Nine cases occurred in consumers of water from this pump. The bacteriological examination revealed suspicious bacteria in the water (see No. 15, Dr. Kinyoun's table), but as 5 of the 9 cases occurred in adjoining houses on I street between Tenth and Eleventh NE., the infection was probably also conveyed by other channels.

The first case on I street occurred on July 28, at No. 1016; the next case, August 10, in No. 1014, followed by two other cases in the same house August 22 and September 15. Another case occurred at No. 1010 October 24. The houses in the entire row are supplied with box privies, and the general surroundings are very unsanitary. There was nothing in common with the milk supply, and the fact that the cases occurred at considerable intervals indicates with more or less certainty that the first case was a focus of infection; but how the germs were carried, unless by flies, or through the air, is a matter impossible to determine.

The houses referred to were supplied as follows: Water-closets in house, 1; water-closets in yard, 1; box privies, 7.

One death, in the person of a white girl aged 17.

In addition to these groups I examined 35 cases in the northeast, of which 7 were fatal, scattered over different parts of this section. Some of the squares, like Nos. 721, 722, and 723, presented a large number of cases. The houses in the first two squares are built upon "made soil," while those in square 723 occupy high and natural ground.

Several of the families received their milk supply from suspicious sources in the extreme northeast.

Deaths, 7—white 5, colored 2.

Twenty-five of the 35 cases were consumers of Potomac water, 6 had drunk both Potomac and well water, 3 had been consumers of spring water, 2 from a suspicious spring in the yard of the Baltimore and Ohio Railroad depot near Delaware avenue, and 1 was an exclusive consumer of Columbia lithia water.

The houses were supplied as follows: Water-closets in house, 19; water-closets in yard, 13; box privies, 3.

A summary of the evidence reveals the fact that of the 89 cases in the northeast 60 were consumers of well water, 25 were consumers of Potomac water, 3 were consumers of spring water, 1 was a consumer of Columbia lithia water. Twenty-seven of the 60 consumers of well water had also been occasional consumers of Potomac water.

The 89 houses were supplied with methods for the disposal of excreta as follows: Water-closets in house, 33; water-closets in yard, 35; box privies, 21.

The general sanitary condition of the northeast is by no means bad, and the majority of the infected houses have sewer connections. A number of squares between North Capitol and First streets NE. occupy the bed of old Tiber Creek and the houses are built upon "made soil," with uncemented cellars, thus allowing free access of the ground air from polluted subsoils, which doubtless is a strong predisposing cause to disease, especially in cities with impermeable pavements; nevertheless, the baneful effects of contaminated wells are strikingly illustrated; and, as in the suburbs, so here I am forced to conclude that they have furnished the largest quota of cases.

SOUTHEAST AND SOUTHWEST.

I have investigated 97 cases in this section, 48 in the southeast and 49 in the southwest.

Southeast furnished 13 imported cases, leaving a balance of 35 cases contracted in the city; of these 14 were fatal, but it should be understood that I examined everywhere a larger proportion of fatal cases, because the certificates of death furnished the location, while for recoveries I had to depend upon information cards or inquiry in the neighborhood.

Among the 14 fatal cases, there were 6 white and 8 colored. Ten were consumers of well water and 4 were consumers of Potomac water.

Three of the consumers of well water received their supply from the pump on E street, between Twelfth and Thirteenth, SE.

The 14 houses were supplied as follows: Water-closets in house, 2; water-closets in yard, 4; box privies, 8; 4 of the latter in a leaky condition.

Of the 21 recoveries, 13 were consumers of well water, and 8 were consumers of Potomac water exclusively. Seven of the consumers of well water also drank occasionally Potomac water.

The cases occurred in houses which were supplied as follows: Water-closets in house, 8; water-closets in yard, 5; box privies, 8.

One of the privies contained a barrel partly sunk in the ground, and three of these boxes were found to be leaky or full to overflowing. One case occurred at No. 805 I street SE. in a very good house, located near a private alley which was defiled with excrement by frequenters of an adjoining saloon.

One case received milk from a grocery at No. 1300 E street while typhoid fever prevailed there.

In square No. 1041 there is an alley on the east and in rear of lot No. 1322 Harrison avenue, which is used by the residents of that section as a place for deposit of human filth, garbage, and other putrescible material, and the collection is kept moist from the drainage of the houses on Harrison avenue and C street in the same square.

On September 11 a colored man was taken sick at No. 1325 C street, and the dejecta were thrown into a leaky and overflowing box privy. On September 29 a child, aged 11 years, was taken sick at 1322 Harrison avenue, and there is much reason for assuming, that infection was carried from the unsanitary conditions referred to.

Southwest.—Of the 49 cases investigated by me in this section, 6 were imported, leaving 43 cases as having been contracted in the District. Of these, 16 were fatal. Only 4 of the 16 cases were consumers of well water, while 12 were consumers of Potomac water. The premises were supplied for the reception of fecal matter as follows: Water-closets in house, 5; water-closets in yard, 6; box privies, 4; privy pit, 1.

Deaths, 16—white, 9; colored, 7.

Of the 27 recoveries, 16 were consumers of well water and 11 were consumers of Potomac water. Thirteen consumers of well water also drank occasionally Potomac water.

The houses were supplied as follows: Water-closets in house, 8; water-closets in yard, 13; box privies, 5; no privy upon premises, 1.

In a fatal case at 1701 Half street SW., the family kept cows and evidently raised vegetables for market. The privy, a mere excavation in the ground, was 35 yards from the well, and the kitchen drain emptied within a few feet from the well. The house was infected with diphtheria last spring.

A fatal case occurred in No. 1343 South Capitol street, and while the sanitary condition of the house was good, the family suffered from the disagreeable odors of box privies, unlawful surface drainage, and the filthy condition of some of the vacant lots in close proximity. Another case occurred later at No. 15 O street, in the same square, and as the general surroundings predisposed to the dissemination of the disease, especially the leaky box privies, I recommended, in the interest of public sanitation, a house to house inspection. The results are stated by Sanitary Inspector E. W. Whitaker, as follows:

All properties in this vicinity were recently inspected by me, and notices duly served on those responsible to abate all nuisances found. The privy boxes in the frame row of houses on the north side of O street, between South Capitol street and First street SW., were all found to be full and filthy, and four of them leaky.

The tenants promptly cleaned the boxes on notice to do so, but at last inspection the owner, T. A. T. Judd, Seventh and F streets SW., had failed to comply with notice, and a warrant has been sworn out against him.

The large open lot at corner of South Capitol and O streets, and immediately south of these houses, I found was used as a dumping ground for all kinds of refuse and filth. Notice was promptly served on James H. Richards, 1115 New Jersey avenue SE., to abate, which he has failed to obey, and a warrant has been prepared for him. There appears to be a leaky water pipe in rear of 1349 South Capitol street, which only an expert can locate.

A summary of the evidence shows that in the 78 cases contracted in this sanitary district 43 were consumers of well water and 35 were consumers of Potomac water. Twenty of the consumers of well water also occasionally drank Potomac water, but in all such instances it may be fairly assumed that during the hot months of July, August, and September the well water was largely preferred.

Sewer connections existed in 51 premises, as water closets were found in 23 houses and closets in 28 yards. Twenty-five premises had box privies, one had a privy pit, and No. 106 Q street SW. had no privy of any description.

In a large number of the cases, especially in the southwest and along the Eastern Branch of the Potomac, the system was very much debilitated by the malarial cachexia prior to the attack. What effect the St. James Canal, the backing up of sewage and consequent flooding of uncemented basements and cellars, or the emanations from the filthy-reeking shores of the Eastern Branch of the Potomac may have had as a contributory factor it is difficult to say, except that backing up of sewage means soil and water pollution, and all these conditions, in the judgment of sanitarians, constitute fruitful sources of disease. The sanitary environment of the individual homes can, in a measure, be judged by the fact that the colored population furnished 50 per cent of the fatal cases.

CENTRAL DISTRICT.

FROM NORTH CAPITOL TO THIRTEENTH STREET NW., NORTH OF THE PUBLIC GROUNDS
AND SOUTH OF THE BOUNDARY.

I have investigated 104 cases in this section, 12 of which were contracted at summer resorts and 92 at home. Of the 92 cases, 21 were fatal—7 among the white and 14 among the colored race. Of these, 11 were consumers of well water, 8 were consumers of Potomac water, 1 melted Kennebec ice, and 1 was a consumer of Columbia lithia and Potomac water.

The methods for the disposal of human excreta in the 21 houses were as follows: Water-closets in houses, 7; water-closets in yard, 11; box privies, 3.

Of the 71 other cases, 43 were consumers of well water, 26 were consumers of Potomac water, 1 was a consumer of melted Kennebec ice, and 1 was a consumer of Potomac and occasionally of Columbia lithia water.

A pump on H street, between Fourth and Fifth streets NW., which was found to be contaminated and closed September 7, contributed 3 of the fatal cases; the well corner of New Jersey avenue and Pierce street contributed 3 fatal cases and 8 other cases; 5 of the cases were consumers of water from the artesian well in the Palais Royal; the pump on corner of Tenth and N streets furnished 4 cases, and the pump on Caroline street and one on North Capitol and Randolph streets, each 2 cases, and the pump on Sixth, between F and G, 3 cases. (See Dr. J. J. Kinyoun's report for result of bacteriological examinations.)

The 71 cases occurred in 63 houses, supplied as follows: Water-closets in the house, 43; water-closets in the yard, 16; water-closets in the cellar, 1; box privies, 3.

In 7 of the houses there was defective plumbing. In one instance, on Kingman place, a defective drain from the water-closet passed through the bedroom. In another case the patient occupied a bedroom supplied with an unventilated stationary wash-basin. In one instance there had been an overflow of sewage from defective drains two weeks before the attack. In one instance, in the rear of 1017 Ninth street, the patient slept next door to a water-closet, or large tank, constructed to accommodate several persons but without proper ventilation, and which was used by a number of families. In three instances the milk supply was derived from infected houses.

One of the nurses at the Children's Hospital contracted the disease in the line of her duty. A trained nurse also attributed her attack to nursing a typhoid-fever patient. Another case occurred in a lady who only for a short time during the extreme illness of a neighbor came in intimate contact with the patient. In another instance a colored girl was in service at a house where a case of typhoid fever occurred July 9 and the patient died August 18. The servant was taken sick August 17 and taken to her home. One of her sisters was attacked September 19, and a brother, aged 18, developed the disease October 14. An explanation of the channels of infection in such cases has been offered in preceding pages. In one case the mother of the boy attributed the attack to his fondness for bathing in polluted streams.

Five cases occurred in residence near the power house on Brightwood avenue, and while they were not typical and have not been included as typhoid fever, they are at least suggestive, as the evidence

shows, that a continued fever lasting in different individuals from a few days to fourteen days developed in inmates of three houses, all consumers of well and spring water, which was found, upon bacteriological examination, to be polluted. (See Dr. Kinyoun's report, tables Nos. 82 and 83.)

SUMMARY.

Of the 92 cases investigated by me and found to have been contracted in the District, 54 were consumers of well water, 34 were consumers of Potomac water, 2 were consumers of melted Kennebec ice, and 2 were consumers of Potomac and Columbia lithia water.

The methods for the disposal of excreta in the houses were as follows: Water-closets in the house, 50; water-closets in the yard, 27; water-closets in the cellar, 1; box privies, 6.

The marked frequency of the disease among consumers of well water is apparent, and other modes of dissemination can not be ignored.

NORTHWEST.

FROM THIRTEENTH STREET TO ROCK CREEK.

I investigated 59 cases in this section, of which 16 were contracted at summer resorts, leaving 43 cases to be disposed of. Of this number, 9 were fatal cases, 3 of which were colored and 6 white. Six were consumers of well water and 3 were consumers of Potomac water. The consumers of well water also drank occasionally Potomac water.

The cases occurred in houses supplied with methods for the disposal of excreta as follows: Water-closets in house, 5; water-closets in yard, 1; box privies, 3.

Of the 34 cases, 20 were consumers of well water, 13 were consumers of Potomac water, and 1 was a consumer of melted Kennebec ice and Potomac water.

The houses were supplied for the disposal of excreta as follows: Water-closets in house, 19; water-closets in yard, 11; box privies, 4.

Of the pumps the one on corner Twenty-seventh and K contributed 3 fatal and 4 other cases; the pump on T, between Seventeenth and Eighteenth streets, 1 fatal and 2 other cases; the pump on Caroline street, 1 fatal and 3 other cases, and the pump on M and Twenty-third streets, 6 cases. (For results of the bacteriological examination of the wells see Dr. Kinyoun's report.)

In one case a young man of respectable parentage and very fond of milk attributed his sickness to drinking milk, which had a decided "rotten-egg flavor."

A colored girl on Twenty-fifth street had drunk water and eaten apples in an infected house on Q and Thirty-fourth streets, Georgetown.

Two cases occurred at 2151 Pennsylvania avenue on the second floor of a house occupied below by a filthy butcher shop, which had been vacated a short time before. This case is mentioned because some very competent observers have commented upon such incidents, and the family was positive that there was a causative relation between this filthy shop and the occurrence of typhoid fever.

SUMMARY.

Of the 43 cases in the northwest 26 were consumers of well water, 16 were consumers of Potomac water, and 1 was a consumer of Potomac and melted Kennebec ice. All but 2 of the consumers of well water also drank Potomac water.

Water-closets in house, 24; water-closets in yard, 12; box privies, 7. Twenty-six of the cases occurred in the white and 17 in the colored race.

The distribution of the cases is shown on the map, and personal inspection reveals the gratifying fact that sanitary homes with occupants who are careful in the selection of their drinking water furnish the least number of cases.

GEORGETOWN.

I have investigated 24 cases in this section, 5 of which were contracted at summer resorts. Of the 19 remaining cases, 6 were fatal. Four were consumers of well water, 1 a consumer of Potomac water, and 1 a consumer of water from a spring located in the cellar.

The houses were supplied as follows: Water-closets in house, 3; water-closet in basement next to kitchen, 1; box privy, 1; privy barrel, 1.

Of the 13 other cases 10 were consumers of well water and 3 were consumers of Potomac water.

The houses were supplied as follows: Water-closets in house, 7; water-closets in yard, 1; box privies, 5, 4 of which were found to be leaky or full to overflowing.

The well on Thirty-fourth street, between O and P, contributed 4 cases, and a well at 1614 Valley street 2 cases.

Twelve of the patients were white, 5 colored. Two of the 5 fatal cases were colored persons.

In one of the fatal cases the water-closet was found in the basement, 12 feet from the kitchen range, and no partition except a curtain to separate the kitchen from this apartment. The water-closet was the ordinary rim flush-basin. Members of this family had diphtheria last year, and although the house is quite modern and comparatively new I am not surprised at the occurrence of these diseases under such circumstances.

In one of the cases it is probable that the disease was contracted at Brightwood, and in another at Ivy City, the patients having worked or remained at these places sufficiently long for the incubation of the germs.

In one instance the patient had drunk spring water while out hunting two weeks before the attack.

In the house of a family with 3 cases I found a box privy full to overflowing. The mother informed me that the first case occurred in April, and that she had buried some of the dejecta in the yard, not over 100 feet from a public pump. Bacteriological examination of the water has not revealed the presence of dangerous germs.

SUMMARY.

Of the 19 cases 14 were consumers of well water, 4 were consumers of Potomac water, and 1 a consumer of water from a spring located in the cellar and liable to seepage.

CLINICAL SUMMARY OF 500 CASES OF TYPHOID FEVER IN RELATION TO RACE, AGE, AND PERCENTAGE OF DEATHS FURNISHED BY THE WHITE AND COLORED RACES.

Of the 500 cases investigated by me, 371 were cases of recovery and 129 were fatal cases. No conclusions as to the fatality of the disease can be drawn from these figures, for, while the ratio of fatal cases investigated to the total number of fatal cases which occurred is positively known, the same information can not be obtained as to the cases of recovery, reports concerning which were incomplete.

Of the 500 cases, 380 occurred among the white and 120 among the colored race.

Of the 129 fatal cases investigated by me, 77 were of white and 52 of colored persons, and of the 149 deaths from typhoid fever during the four months ending October 31, 1895, 87 were white and 62 colored. These figures indicate that while the colored race constitutes only about one-third of the population of the District of Columbia they contributed 41 per cent of the fatal cases of typhoid fever. The 500 cases were distributed according to age as follows:

From 1 to 5 years.....	15	From 41 to 50 years.....	24
From 6 to 10 years.....	59	From 51 to 60 years.....	15
From 11 to 20 years.....	184	Over 60 years.....	4
From 21 to 30 years.....	143		
From 31 to 40 years.....	56	Total	500

The youngest patient was 18 months old, the oldest patient 74 years.

SUMMARY OF 436 CASES OF TYPHOID FEVER CONTRACTED IN THE DISTRICT IN RELATION TO THEIR WATER SUPPLY, METHODS FOR THE DISPOSAL OF EXCRETA, AND OTHER CAUSES.

WELL WATER.

Of the 436 cases contracted in this District, 132 were exclusive consumers of Potomac water and 289 were consumers of well water, and while 186 of this number also drank occasionally Potomac water, for reasons already given, their principal water supply during the heated term was derived from the pumps; 5 were largely consumers of spring water, 4 of cistern water, 1 exclusive consumer of Columbia lithia water, 2 consumers of Potomac and Columbia lithia water, 2 exclusive consumers of melted Kennebec ice, 1 of melted Kennebec ice and Potomac water.

In order to indicate what a final result of a careful examination of our pump water is likely to be it should be stated that at the end of 1890 there were 271 public pumps in service. From 1890 to June 30, 1895, 102 of these were abandoned, because the water, after repeated chemical examination, was found to be dangerous to health. During the last fiscal year 2 deep wells were driven, leaving, July 1, 171 public* pumps in service, not to mention the number of private pumps of whose existence we have no official knowledge. I am satisfied that they are being constructed even now within the city limits, as I encountered one in the southwest, completed during the year, and the water of which was found to be contaminated. The location of the pumps in service July 1, 1895, and their relation to sewers are shown on Map II. The wells abandoned since July 1, 11 in number, as also those found upon bacteriological examination by Dr. Kinyoun to be contaminated, are indicated by a circle. It should be remembered that such examinations were only made in cases of suspected waters, and the question naturally arises, Why should this process of closing the pumps be extended over a number of years, when the results of both the chemical and bacteriological examinations in the past show the majority of the specimens to be contaminated and none above suspicion? Sufficient evidence has been adduced to show that the use of well water, wherever soil pollution has taken place, is fraught with danger, and the numerous sources of soil pollution have been pointed out. The results of a bacteriological examination can not be relied upon to determine the freedom from danger, because an instance has been adduced which demonstrates that dangerous contamination did exist in a well September 17, and all evidence disappeared in a sample taken September 22.

* Information kindly furnished by Captain Burr of the Engineer Corps.

POTOMAC WATER.

What is the relation, if any, between Potomac water and the prevalence of typhoid fever in the District? While the Potomac water compares very favorably as regards purity with other rivers, there is much reason for believing that it is not at all times free from danger. There are, of course, a number of competent men who, on account of the character of its watershed and the comparative absence of large towns above the intake, believe there is little or no danger from specific contamination, especially as none of the towns are sewered. These towns range from 44 to 125 miles in distance from the city. They appear, however, to disregard the contaminating influence of a town, or of settlements on rivers, which has been well established by chemical and bacteriological analyses. We have the bacteriological examinations of Theobald Smith to show that turbidity of the Potomac water is always accompanied by a larger amount of organic matter and germs, and that fecal bacteria and turbidity are also coincident, and there can not be a successful concealment of the fact that the same showers that bring to us large sections of pulverized river banks also wash through barnyards, cesspools, and outhouses before finding their way through creeks to the Potomac and the reservoirs. While it is true that so far no typhoid fever germs have been isolated from the Potomac, the bacteriological examinations conducted by Dr. Kinyoun during the past two months have repeatedly demonstrated the presence of the colon bacillus, and this, too, when the water was perfectly clear. This same condition has been observed in the bacteriological investigations conducted last year at the Army Medical Museum, and Dr. Billings, in speaking of these results, said:

At certain times of the year the river water is so loaded with sediment as to be unfit for bathing as well as for drinking and cooking purposes; it contains fecal bacilli at all times, although these are probably for the most part derived from the excreta of horses and cattle and not of man. And it is probable, although not proven, that it at times contains organisms or substances capable of producing diarrhoea in persons not accustomed to its use, and the typhoid bacillus is not absolutely excluded from it, although it has never been actually found in it.

This is the conservative statement of one of our most competent sanitarians, in an address to the Medical Society of the District of Columbia, delivered October 24, 1894. I have had grave suspicions for several years that some of the fecal bacteria were derived from human excreta and desired to convince myself by a personal inspection in the present investigation, but as time and the emergency fund were limited, the following circular was addressed to physicians residing in ten towns along the Potomac or its tributaries:

NOVEMBER 11, 1895.

DEAR SIR: In view of the large number of deaths from typhoid fever in this city since July 1, 1895, this office is now engaged in an investigation into the causes of this disease, and I should be glad to receive from you information on the following points:

First. Have you found typhoid fever more prevalent than usual during the period mentioned?

Second. How many of your patients were consumers of Potomac water or one of its tributaries?

Third. How many of your cases resided along water courses which empty directly or indirectly into the Potomac River?

Fourth. Have your cases been of a more malignant type than usual during the past four months?

Fifth. Do you know of any source by which the Potomac River or its branches are subject to pollution, especially from the wastes of human life? Since the bacteriological examination of the water reveals the presence of fecal bacteria, it is

of especial interest to know in how far the water is liable to contamination from infected privies along the runs which ultimately empty into the Potomac River.

I inclose penalty envelopes, and in the interest of public sanitation I hope to hear from you at an early day; your assistance will be greatly appreciated and duly acknowledged.

Respectfully,

WM. C. WOODWARD, M. D.,
Health Officer.

ORIGINAL SOURCES OF POLLUTION OF POTOMAC WATER.

Replies were received from eight physicians, representing six localities. The source of one reply could not be determined, as the physician simply added his answer to the questions without further identification.

Dr. C. S. Hoffman, from Keyser, W. Va., in answer to question 3, writes: "Keyser is so situated if any drain takes place it must drain into the Potomac River. Then, again, I have seen the contents of privy boxes emptied into the Potomac River. This last matter has, however, been prohibited by the town authorities, and I do not know of its occurrence since or directly before the term you mention, July 1, 1895. * * *

Now the privy boxes of the town are mostly emptied on a slate hill-side about half a mile from the town, and in such a place that a heavy rain can wash it down into New Creek, within one-half mile of where it empties into the Potomac River."

Dr. Thomas H. West, of Keyser, in reply to the fifth question, answers: "I do not."

Dr. A. S. Reynolds, from Shepherdstown, W. Va., writes: "The greatest source of pollution of the water of the Potomac is the canal. All slops and filth of every kind, dead animals, manure from stables are thrown into the canal by boatmen, and the people living along it also use it for very much the same purpose. The water from the canal is continually wasted by leaks into the river, which must be a great source of pollution."

Dr. J. S. Flemming, of Shepherdstown, W. Va., says: "Yes; there are privies and hogpens, which pollute a small run passing through the town."

Dr. V. L. Parry, of Charlestown, W. Va., replies "yes" to the first question, "one" to the third question, and "no" to the other questions.

Dr. M. L. Gannon, Williamsport (?), Md., replies to the fifth question: "I do not; there are some isolated places, but not emptying directly into the river; only one privy."

Dr. B. B. Ranson, of Harpers Ferry, in reply to question 5 says: "The only source of contamination that I know of in this vicinity is the immense quantity of wood shavings from two pulp mills at this point which fills the bottom of the Potomac River for miles and are thrown out on the banks, where, decaying, they become very foul. In addition to which large numbers of fish and eels are cut up by the wheels of the pulp mills and furnish a considerable amount of animal matter to the water."

Dr. H. B. Miller, of Cumberland, writes: "The entire outlet for waste material here is the Potomac River; all closets are cleaned and refuse deposited (on soil drained into) or dumped direct into the river, while many closets and sewers open direct into streams which flow (when it rains) into the river. The unusual dry spell has prevented the washing out and consequent distribution of the closet germs, and the highly colored condition of Potomac River water here has compelled people to use well or other water brought from a distance. We have had very little sickness from epidemic troubles. When high water clears the coloring matter out and washes in the closet accumulation, I fear we will be able to report almost no disease epidemic."

TYPHOID FEVER AT CUMBERLAND, MD., AND ITS POSSIBLE RELATION TO THE INCREASE OF THE DISEASE IN THE DISTRICT OF COLUMBIA IN 1889-90.

A study of the typhoid-fever epidemic which prevailed in the above city from December, 1889, until the spring of 1890 shows that the disease was not present until the discharges from a case of typhoid fever living on one of the little runs which empties into the Potomac about 300 feet above the pumping station found their way into the city water supply. Dr. W. W. Wiley, of Cumberland, wrote me June 25, 1890:

This epidemic first appeared in a young man who returned from Ohio quite ill about the 10th of December, 1889. The case terminated fatally on the 20th of the same month. The next case appeared January 10, 1890, and since then we have had about 485 cases. Our population is 12,000. Every case but one can be traced to the use of our river water. I am not aware of any case occurring just below Cumberland, as no one used the water; but I am informed that several cases occurred at Hancock, which is 30 miles below Cumberland, and which could be traced to the drinking of the river water.

A detailed history of this epidemic, with "plat of privies at Cumberland," will be found in appendix.

The records of your office show that typhoid fever prevailed to an unusual extent in this city from December, 1889, to April 30, 1890, as the deaths for these months from typhoid fever amounted to 74, as compared with 42 for the corresponding months of the previous year.

SELF-PURIFICATION OF RIVERS.

It is clear that a river, after it receives the sewage of a number of towns, can not be as pure as before, and the question naturally arises, Can a river once polluted ever be a safe source of supply below the source of pollution? The question of self-purification of rivers has been earnestly studied, and the conclusion has been reached that a certain degree of purification is possible by natural means, viz:

(1) Dilution of the sewage with clean or unpolluted water which empties into the stream along its course.

(2) By deposition of the suspended matter, carrying with it some of the organic material.

(3) By the agency of fish, water plants, algae, and infusoria, which require organic matter for their food.

(4) By the bacteria of nitrification, which are so largely instrumental in the process of oxidation of organic matter. It has been shown that the mere presence of oxygen in water without these bacteria does not lead to a perceptible diminution of organic matter.

(5) The rapidity of oxidation is influenced by the volume of organic matter present, the temperature of the water, the distance of the run, also whether the stream has a wide surface exposed to the sun and air, the rapidity of the current, and the character of the river bed.

The various factors named are calculated to purify the water in our river, provided we give it a chance, but with increasing settlements it is possible that practically here, as elsewhere, the pollution becomes continuous from its source to the reservoirs. The statement of Dr. Tidy and other chemists, who declare that a flow of even 10 or 12 miles is sufficient to free a river of all trace of sewage contamination, is no longer credited, especially since the Massachusetts State Board of Health for 1876 reports an outbreak of typhoid fever in a hospital using river water, which was traced to an infected barracks 25 miles up the stream.

As we can hardly believe that pollution is tolerated in close proximity to the intake of our river water, I submit that the almost constant presence of fecal bacteria is evidence of some distant source of pollution, and that they have not been destroyed by the agencies which are believed to be all sufficient by the advocates of the theory of "self-purification of streams."

While it is true that the specific germs of typhoid fever have never been demonstrated in Potomac water, it is equally true that they were not demonstrated in the well at Takoma which infected eleven persons, where the bacteriologist simply found the colon bacillus, which is a positive evidence of fecal contamination; but all this is not very surprising when it is considered that the best bacteriologists frequently fail to find the germs of typhoid fever under conditions strongly suggestive of their presence. Surely we ought not to wait until they are demonstrated in the spigots of our homes. This is not a matter of theory, but it is the consensus of opinion of those best qualified to judge, that while a stream under favorable conditions undergoes a certain degree of self-purification, we can not rest satisfied that dangerous contamination does not exist, and such water is unsafe for drinking pur-

poses unless it has been subjected to filtration by means of filtering beds. The necessity for purification is clearly apparent from the evidence presented by physicians residing along the original source of pollution. The effects of a pure water supply upon the decrease of typhoid fever has been abundantly demonstrated in various cities, and the very fact that the filtering basins eliminate from 90 to 98 per cent of all germs is the best indication that they will remove a corresponding number of disease germs. The question as to how much of the immunity from typhoid fever in the northwest section is due to the use of domestic filters and the sterilization of the water by boiling can not be decided, except by a census of all the houses, but in my judgment these precautions have been quite general, and proved of great benefit. Körösi, of Budapest, has proved by statistics that of 7,000 residents in the most fashionable part of his native city those who used filtered water contributed 9.3 cases per 1,000, while the consumers of unfiltered water furnished 14.1 cases per 1,000.

METHODS FOR THE DISPOSAL OF HUMAN EXCRETA.

Of the 421 infected houses 261 had sewer connections, 152 had privies, 2 had cesspools, 4 had surface privies or sinks, and 2 had no privies. A census taken in 1893 showed the presence, in round numbers, of 43,000 houses in the city and 7,000 in the county, with 8,959 box privies within the city limits and 5,133 in the county. Since that time it is safe to estimate from the building permits that 2,000 additional dwellings have been built and more sewer connections have been made. No official records are kept as to the exact number of box privies now in service, but judging from the statement of the Odorless Excavating Company the number within the city limits has probably decreased to about 7,000, with an increase to about 6,000 in the suburbs, making a total of 13,000 box privies now in use in the District. This leaves 39,000 houses supplied with sewer connections and 13,000 houses with box privies and ordinary makeshifts, and it is a noteworthy fact that while the 39,000 houses with sewer connections contributed 261 of the typhoid fever houses, the 13,000 houses supplied with makeshifts furnished 160 infected houses. Map III shows the distribution of box privies in 1893. The rôle they play as factors in soil, water, and air pollution is best judged by the fact that during the fiscal year ending June 30, 1895, the sanitary inspectors reported to your office 4,372 box privies as "full," 746 as "leaky," 5,201 "filthy," and 230 "dilapidated." These boxes, even if there were no wells, are still a source of danger in so far as they favor the transmission of germs by means of infected flies, nor can the possibility be ignored that these organisms in leaky or overflowing boxes may reach the upper layer of the soil, and, with pulverized dust, gain access to the system.

It has been proven over and over again that while the rate of typhoid fever diminished after the introduction of a good water supply, the effects are still more marked when combined with a good system of sewers.

IMPURE ICE AND MILK.

The relations of impure ice and milk supplies to the prevalence of typhoid fever in this city have not been prominently developed in this investigation. This is due to the fact that in many instances the household did not even know the name of their dairyman, or that they purchased milk from groceries, who in turn received their supply from several shippers. With the enforcement of the recent laws upon the

subject it will be possible to trace the source of many obscure milk infections. From the evidence referred to on pages 258, 259, 267, 270, 271, 273, and also because of the very impure condition of the dairy waters examined by Dr. Kinyoun, it is safe to assume that typhoid fever has to a certain extent been disseminated through the medium of the milk supply. There were two cases who, instead of drinking well or Potomac water, preferred the drippings of melted Kennebec ice, and used it during the summer months, forgetting the fact, if they ever knew, that ice may be as impure as the water from which it is obtained. Another case used melted Kennebec ice largely, but also used Potomac water occasionally. Dr. Kinyoun has examined the ice supplied by seven different companies in this city and found some of the specimens contaminated with sewage bacteria. The results of his investigation will be seen by reference to his report. Some of the artificial ice companies use filtered Potomac water, while another, after filtering the spring water, subject it to a thorough boiling. The ice company located on the river above the Aqueduct Bridge, derives its ice in part from the Potomac, cut at that point; but unfortunately no samples could be had, as the supply from this source was exhausted; but there can be no question that the sources of our local ice supply should be closely watched.

I regret that want of time and the overworked state of the bacteriological laboratory did not permit the extension of this inquiry into the condition of soda and other carbonated waters, many of which are doubtless derived from polluted sources.

The possibility that infection may be conveyed by means of excreta, when used as fertilizer, should not be overlooked, as I am informed that the excavating company disposes of its collections to those willing to use it.

CONCLUSIONS.

The facts presented in the foregoing pages justify the following conclusions:

First. Typhoid fever has increased with almost uninterrupted uniformity in this District during the past twelve years, indicating the persistence of local causes.

Second. Typhoid fever is more prevalent in the suburbs and unsanitary portions of the District, indicating the encouraging fact that the causes are largely preventable.

Third. The rate of typhoid fever cases in certain parts of the city, like the northwest, is no greater than in some of the most healthy American cities.

Fourth. The majority of persons attacked were consumers of well water, many of which were found contaminated, and none above suspicion.

Fifth. A large percentage of the cases occurred in houses supplied with box privies, which, apart from being an important cause of soil pollution, are believed to be otherwise instrumental in the dissemination of germs, chiefly through the agency of flies.

Sixth. While the Potomac water compares favorably with that of other rivers as regards purity, no water supply from streams once polluted can be considered safe for drinking purpose without filtration or sterilization.

Since the experience of other cities, both at home and abroad, has demonstrated that typhoid fever is to a large extent preventable, I respectfully submit the following

RECOMMENDATIONS.

First. The immediate closing of every well in the District wherever a better water supply can be obtained.

Second. The early completion and extension of all necessary sewers within the city limits, and the enforcement of the law to make sewer connections.

Third. The abandonment of all box privies within the city limits and the enactment of more stringent laws for the prevention of soil pollution, together with a rigid, frequent, and systematic inspection of all box privies in the suburbs.

Fourth. The improvement of the Potomac water by means of filtering basins, and the extension of the water supply to the suburbs at the earliest moment practicable.

Fifth. Such measures as may be necessary to improve the sanitary condition in the lower part of the city, along the Potomac and the Eastern Branch, looking to the reclamation of stagnant and polluted marshes, and the prompt disposal of the sewage.

Sixth. The enactment of a law requiring notification to the health officer of all cases of typhoid fever and other infectious diseases in the District of Columbia, together with a rigid enforcement of the building regulations requiring the cementing of cellars and basements, to prevent contamination of the air from polluted subsoils, and the systematic inspection of dairies inaugurated by you.

In the meantime, as a preventive measure I earnestly recommend to the public the thorough disinfection of the excreta from all typhoid fever patients and greater care on the part of those connected with the sick, together with boiling the water and milk supply.

A most conservative estimate demonstrates that the number of cases of typhoid fever for the four months ending October 31 was scarcely less than 795. These cases represented 30,800 days lost in sickness at an average cost of \$1 per day. Assuming an annual average of 1,500 cases, the loss amounts to \$90,000 per annum, thus indicating that it will be in the highest degree wisdom as well as economy to apply a prompt, speedy, and effective remedy.

It affords me great pleasure to testify to the fact that my investigation tends to confirm the conclusions reached by the special committee appointed by the Medical Society of the District of Columbia, and so ably presented in their report submitted June 6, 1894. I tender to you my sincere thanks for your valuable assistance and for selecting me for this duty. As the cost of the investigation will not reach the sum of \$400, I can truthfully say that with me the labor has been one of love. If, however, this report should aid your well-directed efforts to improve the health of this city, and if, above all, the recommendations should be acted upon and result in what I confidently expect, a decided decrease not only of typhoid fever but of other diseases which are influenced, if not caused, by contaminated water and soil, I shall feel amply repaid. Whatever merit this report may possess, its scientific value has been greatly enhanced by a series of painstaking bacteriological investigations of the water and ice supply, conducted by Dr. J. J. Kinyoun under the authority of Surg. Gen. W. Wyman of the Marine-Hospital Service.

In conclusion, I express my acknowledgments to Mr. William B. Moore, the efficient statistician of your office, for valuable assistance and for the preparation of the charts and tables, also to Mr. George H.



Bailey, computing engineer, for the preparation of plats and the location of the old water courses on the city map.

Very respectfully, your obedient servant,

GEO. M. KOBER, M. D.,
Special Medical Sanitary Inspector.

WILLIAM C. WOODWARD, M. D.,
Health Officer, District of Columbia.

APPENDIX A.

TYPHOID FEVER AT CUMBERLAND, MD.

[Extracts from the Medical News, Philadelphia, April 12, 1890.]

In another column we publish an account, obtained by sending a special correspondent to the spot, of the outbreak of typhoid fever which for four months has ravaged the town of Cumberland, Md. As will be seen by this article, the entire outbreak is dependent upon absolute disregard of the common laws of nature and health, and of the entrance into the water of a specific germ before the sickness which was prevalent became typical of enteric fever. Another interesting addition is made to our knowledge of the spread of diseases and their dependence upon an individual cause, in many instances for their existence, and the world at large is treated to the sight of a fairly intelligent body of citizens establishing a vicious circle between their mouths and the drainage of their houses and pig styes.

[Special correspondence.]

Since the early part of December, 1889, the town of Cumberland, Md., has been subjected to an epidemic of enteric fever closely resembling in its cause and course that which occurred at Plymouth, Pa., some five or six years ago. While the mortality has been by no means so high, the causes of the disease are strikingly similar in both cases. Cumberland is a town of several thousand people, situated upon the Potomac River in a valley with steep and rather precipitous mountains surrounding it. The town depends for its existence chiefly on the railroads which center there, the largest of which is the Baltimore and Ohio. The population is a "railroad population," and is made up largely of persons in the middle walks of life. The drainage of the streets is surface drainage, and even this is exceedingly bad, while the rainfall is somewhat excessive and the entire town damp.

It will be seen, therefore, that in this instance a peculiarly favorable soil for such an epidemic was present, and the townspeople have, with a disregard of the plainest rules of sanitation, brought the disease upon themselves, as shown by the diagram and the following description.

It will be seen that a line of privies a mile long empty directly over the bank into Wills Creek, this part of the town being made up of the poorest classes, and that two other lines empty themselves into the small "runs" to the left of the diagram, while the entire drainage of the remaining houses eventually reaches the same streams, though not so directly. The position of the pumping station B is about 200 feet below the mouth of the two runs and on the same side of the stream on the periphery of the bend. From the point where Wills Creek empties into the pool, formed by the dam, to the pumping station is about 100 yards, and this space is covered on the shore by several acres of garbage over which pigs roam freely. If engineers had wished to plan a means of pumping sewage into a town instead of away from it they could not have succeeded more completely. But the stupidity permitting such an arrangement in the first place outdid itself some months later when a Philadelphia expert arranged to have the pipe from the pumping station carried to the opposite shore to get water before it was contaminated. As the stream is only about 100 or 200 feet wide this is, on the face of it, absurd, since the pool formed by the dam consists in quiet water and not water rapidly flowing. Again, the mouth of the pipe being now on the short side of the bend soon became occluded by mud deposited there, while the water of the stream naturally followed the outer part of the course and kept the channel free. After the epidemic was established the city engineer found the pipe on the Virginia shore bent out of place and buried under 6 feet of mud and that all the water supplied to the town was obtained from the old pipe on the sewage side of the stream.

Having given an account of the water supply, let us turn to another interesting portion of this outbreak. Typhoid was not present until the discharges from a case of typhoid fever, living on one of the little runs at D, found their way into the city supply, although it is to be noted that a large amount of diarrhea of a dysenteric type had been epidemic, and is now prevalent. In other words, the drainage of a large number of privies caused diarrhea and dysentery, but it required a case of the specific disease named to cause an outbreak of that affection.

APPENDIX B.

REPORT ON THE SANITARY CONDITION OF TAKOMA PARK AND BROOKLAND, BY
O. T. BEAUMONT, SANITARY INSPECTOR.

[Takoma Park.]

HEALTH DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, September 28, 1895.

SIR: Agreeably to orders relative to making a house-to-house inspection of that section of the District known as Takoma Park, I have the honor to state that I have performed that duty, and beg leave to submit the following report:

Takoma Park seems to be well located. The sites selected for residences, being natural elevations of ground, afford ample opportunity for surface drainage. The houses are isolated, and sufficiently removed one from another to secure both quiet and cleanliness. But as an offset to the advantages of elevation is the geological character of the soil, which quickly absorbs the rainfall and surface drainage, proving conclusively that the wells, which may be found at each residence, unless carefully protected, are susceptible to disease-breeding germs by being brought into contact with the drainage from privy vaults or cesspools. Fortunately, but few of the latter exist in this locality, but even so few are more than should be tolerated, unless constructed under the supervision of your office. In my opinion they are the greatest propagators of the germs of disease. To speak mildly, they are offensive and repulsive.

There never was a greater blunder by civilized man, from a sanitary point of view, than the custom of the construction of privy vaults and cesspools. They are without question the origin of many cases of sickness. They not only contaminate the air, but their contents may percolate through the earth and poison the wells in the near vicinity. Again, it is not always necessary that the wells be very near them, for a vein of water may be struck which might convey the poison to a long distance. There are three of these cesspools on Chestnut avenue. The first to which I desire to call your attention is located on the premises of Mr. T. T. It is in close proximity to the house and is fed from water-closet and bathroom. It is so completely covered by boards and earth that no inspection can be made to determine its construction or the quantity of matter now inclosed.

The second one is located two doors above, on the premises occupied by Mr. R. P. B. This cesspool is located about 100 feet from the house and is also fed from closet and bathroom. It is in such a condition as to be partially inspected, as the boards covering the top have rotted away and allowed a portion of the earth to fall in. This cesspool is simply a large excavation in the earth, neither protected by railing or otherwise, and holding about 20 or 30 barrels of liquid matter.

The third is located opposite to No. 1, on the premises of Mr. H. A. C. This cesspool can be partially inspected and seems to be walled up and cemented. It is in a good condition, having been recently cleaned and fumigated.

I can not urge too strongly the necessity of prompt action by this office in relation to these cesspools, to the extent, at least, of compelling the owners to comply with the law, "that they may be readily inspected" at all times and constructed according to law.

Another important and dangerous feature is the burying of fecal matter on the premises by the occupant, such acknowledgments having been made to me in several instances. In one particular case I was much surprised to find the violator of law and sanitation to be a physician. In each case, when discovered, I have warned the violator that any subsequent infraction of the health ordinances would be met with prompt prosecution. Another feature in connection with privy cleaning arises here. The inhabitants of this locality do not seem to be aware of the existence of a lawful scavenger, but employ whom they may please to remove the contents and carry it away, to be deposited at a point unknown. As this is a direct violation of law, I have instructed the residents to promptly inform this office or the lawful scavenger when his services are needed. The police authorities should place a careful watch over these violators and arrest and bring them before the courts to be prosecuted under the health ordinances.

Another important matter is a 24-inch tile sewer which has its terminal in the rear yard of Mr. B. W. K., at the intersection of Maple and Carroll avenues. I am informed that it was constructed to receive the surface drainage and kitchen refuse from several houses west (in Maryland), which originally emptied into the gutters. To stop this sewer at the point herein described is to jeopardize the health of the families of both Mr. K. and Mr. V. H. While this sewer is at present free from odor and perfectly dry, as far as the eye can see, I am informed by Mrs. K. and Mrs. V. H.

that after rainfall the odor is very offensive, proving the fact that at a point between source and mouth there must be soluble matter that remains to rot and decay, for the simple reason that there is not pressure enough behind to force it to the mouth.

Why a sewer of such dimensions should be constructed with such a small amount of service to perform is beyond my comprehension, because a sewer which is disproportionately large in comparison with the amount of drainage becomes an inoperative apparatus by reason of its undue dimensions; while, if the same amount of drainage is concentrated within a more limited channel, a greater rapidity is produced, and any addition to the contents of the sewer aids, by the full force of its gravity, in propelling the entire quantity forward to the point of discharge. It is well known that the smaller the pipe the less friction, and the greater the hydraulic pressure the greater the velocity, and consequently the less chance there is of any obstruction taking place. This sewer should be replaced by a much smaller one and extended to a point where connection can be made to a running stream of water. Chemical analysis and bacteriological tests of water taken from the two principal springs are now being conducted by this office.

A detailed statement of the condition of the premises accompanies this report.

Very respectfully,

O. T. BEAUMONT, *Inspector.*

WILLIAM C. WOODWARD, M. D.,
Health Officer District of Columbia.

NOTES OF THE INSPECTION AT TAKOMA PARK.

1. L. B. B., Piney Branch road, rooms 9, family 6: Surface drainage good; sanitary condition good; box privy, metallic can, good condition, well removed from house and pump.
2. H. S. K., Piney Branch road, rooms 12, family 5: Box privy, metallic can, good condition, well removed from house and well; surface drainage good; sanitary condition good.
3. C. T. L., Piney Branch road, rooms 9, family 4: Box privy, metallic can, good condition, well removed from house and well; surface drainage good; sanitary condition good.
4. F. F., Piney Branch road, rooms 4, family 5: No privy accommodations on first visit; suitable accommodations now constructed; surface drainage good; sanitary condition fair.
5. R. W. B., Highland avenue, rooms 13, family 4: Box privy, tight box, well lined, well removed from pump and house; surface drainage good; sanitary condition good.
6. T. M. L., Highland avenue, rooms 10, family 4: Box privy, metallic can, good condition, and well removed; surface drainage good; sanitary condition good.
7. T. L., Highland avenue, rooms 8, family 7: Box privy, metallic can, good condition, well removed from house and pump; surface drainage good; sanitary condition good.
8. H. A. C., Vermillion avenue, rooms 8, family 2: Box closets (2) in good condition, tight boxes; surface drainage good; sanitary condition good.
9. W. E. S., Blair avenue, rooms 6, family 2: Box closet, metallic can, using burning lamp to destroy gases, in fine condition; surface drainage good; sanitary condition good.
10. W. H. S., Blair avenue, rooms 6, family 3: Box privy, metallic can, good condition; surface drainage good; sanitary condition good.
11. C. W. B., Blair avenue, rooms 5, family 3: Box privy, metallic can, good condition; surface drainage good; sanitary condition good.
12. J. T. C., Blair avenue, rooms 4, family 3: Box privy in fair condition, buries the contents near by in the woods; surface drainage good; sanitary condition fair; warned.
13. J. P., Blair avenue, rooms 6, family 5: Box privy in good condition, well removed from house, buries contents in woods near by; surface drainage good; sanitary condition fair; warned.
14. H. C. J., Chestnut avenue, rooms 9, family 3: Box closet, metallic can, good condition; surface drainage good; sanitary condition good.
15. J. M., Chestnut avenue, rooms 7, family 3: Box privy, metallic can, fair condition, lamp burning to destroy gases; surface drainage good; sanitary condition good.
16. T. F. M., Chestnut avenue, rooms 9, family 5: Box privy, well removed from house, condition good; surface drainage good; sanitary condition fair. I found at the rear of the house a large barrel of garbage without being covered, with some odor. I also found that the dripping from ice box was saturating the porch and dropping to the earth below. I cautioned the owner as to the necessity of more careful attention of his servants to these matters.

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17. J. M. B., Chestnut avenue, rooms 15, family 11: Box privies (2), one full and filthy, the other clean; notice served; surface drainage good; sanitary condition fair.
18. D., Chestnut avenue, rooms 8, family 5: Box privy, metallic can, good condition; surface drainage good; sanitary condition good.
19. T. T., Chestnut avenue, rooms 7, family 5: Box privy in yard in good condition; water-closet in bathroom connected to cesspool in yard (can not be inspected); surface drainage good; sanitary condition seems to be good.
20. G. A. W., Chestnut avenue, rooms 12, family 7: Box privy in good condition; surface drainage good; there is a drain from pump in stable which flows to gutter along Baltimore and Ohio Railroad; sanitary condition seems to be good.
21. R. P. B., Chestnut avenue, rooms 8, family 3: Box closet in good condition; water-closet in bathroom connected to cesspool; surface drainage good.
22. H. A. C., Chestnut avenue, rooms 15, family 9: Privies connected to cesspool; surface drainage good; sanitary condition seems to be good.
23. H. M. B., Magnolia avenue, rooms 10, family 3: Box privy in yard in good condition; bury contents on premises; surface drainage good; sanitary condition seems to be good; warned.
24. M. R. E., Magnolia avenue, rooms 10, family 1: Box privy, metallic box, fine order; all conditions excellent.
25. J. F. B., Magnolia avenue, rooms 8, family 6: Box privy in yard, needed cleaning; notice served; sanitary condition good; surface drainage good.
26. T. W., Magnolia avenue, rooms 13, family 16: Box privy in good order; bury contents in yard; good drainage; sanitary condition fair; warned.
27. M. A. D., Magnolia avenue, rooms 11, family 7: Box privy, metallic can, good order; surface drainage good; sanitary condition good.
28. C. M. H., Oak avenue, rooms 8, family 2: Privy without vessel; notified; surface drainage good; everything in good order except privy.
29. W. A., Oak avenue, rooms 11, family 4: Box privy, metallic box, in good condition; surface drainage and sanitary condition good.
30. J. F. G., Oak avenue, rooms 7, family 5: Closet in yard in bad condition; Inspector Shepherd has parties under notice; surface drainage good; sanitary condition fair.
31. P. & G., Oak avenue, store, Takoma Hall: Privy and other surroundings good.
32. J. F. G., Oak avenue, drug store: Privy and other surroundings good.
33. T. F. S., Spring avenue, rooms 4, family 2: Privy in good order; all surroundings in good condition.
34. J. J. C., Oak avenue, rooms 6, family 9: Box privy in good order; all surroundings good.
35. W. F. W., Carroll avenue, rooms 8, family 5: Privy accommodations good; surface drainage and sanitary condition good.
36. G. H. W., Carroll avenue: No one at home.
37. A. V. P., Carroll avenue, rooms 10, family 3: Has closet in bathroom connected to cesspool, but does not use it; two box privies with metallic cans in yard in good condition; all conditions good.
38. G. C. K., Carroll avenue, rooms 8, family 2: Box privy with metallic can; everything in first-class order.
39. B. W. K., Maple avenue, rooms 7, family 4: Box privy, metallic can, in good order; excellent conditions so far as cleanliness. The foul sewer stops here.
40. I. J., Maple avenue, rooms 6, family 6: Metallic can used for privy purposes; contents buried on premises; sanitary condition bad, as ground is low; house next to where typhoid fever exists; warned.
41. S. E. P., Maple avenue, rooms 10, family 7: Neither bath nor closet in house; box privy, well removed from house, metallic box, in good order and well lined; surface drainage is good and place in clean condition; pump on premises, but not used at present for drinking purposes; drainage from pump to lowlands some distance away.
42. L. F. D., Vine street, rooms 9, family 8: Bathroom and closet in house, but not in use; inspected by Mr. Shepherd in June; surface drainage good; sanitary condition fair; box privy, metallic can, good condition.
43. A. J. M., Vine street, rooms 5, family 4: Box privy, metallic can, good condition; all conditions good.
44. Mr. H., Vine street: No one at home.
45. G. F. H., Vine street, rooms 4, family 9: Box privy in good order; surroundings fairly good.
46. J. H. V. H., Carroll avenue, rooms 10, family 5: Box privy, metallic can, in good order; all conditions good.
47. F. E. D., Carroll avenue, rooms 6, family 6: Box closet, metallic can, good condition; all conditions good.

Respectfully submitted.

O. T. BEAUMONT,
Sanitary Inspector Sixth District.

REPORT ON THE SANITARY CONDITION OF BROOKLAND, BY O. T. BEAUMONT,
SANITARY INSPECTOR.HEALTH DEPARTMENT, DISTRICT OF COLUMBIA,
Washington, October 12, 1895.

SIR: In accordance with your instructions, I would respectfully state that I have made a careful sanitary inspection of Brookland, and beg leave to submit herewith the following report:

Considered topographically, Brookland should be divided into two sections to give a proper description; that portion lying east of Eleventh street being known as highland, and that portion lying west of Eleventh street as lowland. In the highland the surface drainage is excellent. The grounds and yards are in a good sanitary condition. The drains are all open; no standing water, and the entire section shows evidences of constant and systematic attention. But while the highlands or watersheds are cleansing themselves by virtue of their position, the refuse matter is perpetually and systematically being carried to the lower sections, causing filth and offensive conditions.

As these lowlands are not thus naturally drained, the results being the pollution of wells and springs—said wells and springs being subjected to the greatest liability to danger from contamination by drainage from leaky vaults, overflowing cesspools, and leaky privy boxes—at this point I beg leave to state that it seems unaccountable to me that man, with all his boasted progress, has not yet generally acquired that degree of sanitary knowledge somehow obtained by the cat, and acted upon by it within the first three months of its existence. I do not believe that anyone has the right to pollute the atmosphere or the waters which a bountiful Creator has provided for his creatures.

In my opinion much sickness in this village is caused by these faultily constructed cesspools and privies, which can be found in every block. Many of the inclosing walls of these cesspools are not tight, and neither box, bucket, nor other tight vessel is used in the privies to contain the excrement; therefore the earth beneath and around them drinks up the liquid filth until it becomes excrement sodden. Wells in the vicinity are poisoned. The exhalations of organic matter from these filth temples and the adjacent grounds at least enrich the soil in the bodies of human beings, who breathe it for the seeds of disease, if it does not generate disease itself. Every neighborhood where the back yards contain such privies and cesspools is a haunt of typhoid and other filth-fed maladies.

Another source of trouble and annoyance arises here. Many people are under the impression that it is not necessary to clean privies or cesspools until they are ready to overflow. Neither do they pay any attention to disinfecting. They are not aware of the fact that the drier the contents are the less harmful they are. Again and again a citizen has honestly said to me, "There is nothing the matter with my privy, and it don't need cleaning," when its condition was foul and offensive. Again, I find persons of the higher order of intelligence (who should be teachers of sanitation to those less fortunate) the first to violate sanitary laws by burying the contents of privies on their premises. There are probably hundreds of such graves in Brookland to-day which will poison the earth for many years to come. Many of these cesspools are so constructed as to receive all matter from closet and bath, with the addition of the rain leaders and downspouts connected therewith. After a heavy rainfall these cesspools overflow by being flooded by rain spouts, causing agitation which dissolves the excrement and carries it by a waste pipe (located near top of cesspool) to the most convenient place, either street, gutter, or open lot.

To run the accumulated contents of a privy vault into a street or open lot is a sanitary crime against humanity, which under no circumstances should be allowed. In my judgment all vaults or cesspools within the District should be cleaned out and filled up with fresh earth, and that as a substitute tight barrels or boxes be placed under the seats of the outhouses, easily accessible for inspection or cleaning. This plan I am convinced is perfectly feasible. It may require some energy and firmness to set it going, but once under way would be satisfactory until proper sewer facilities are afforded. But if in your judgment privy vaults are a necessity in suburban towns, I suggest the enactment of laws to govern their construction and keeping, viz:

AN ORDINANCE to regulate the construction and keeping of privy vaults and cesspools within the District of Columbia.

SECTION 1. Any person or persons intending to construct a privy vault or cesspool shall first obtain a written permit so to do, signed by the health officer, which permit shall designate the location of lot, distance from any house, spring, or well, the kind of vault or cesspool, whether to be made water-tight or otherwise, and depth and diameter thereof, and shall state what ventilation is required.

SEC. 2. No privy vault or cesspool used for the deposit of night soil or other waste shall be allowed by the owner, lessee, agent, or occupant to become foul and offensive,

and when, in the opinion of the health officer or of any of his inspectors, any privy vault or cesspool shall need cleaning or disinfecting, it shall be the duty of said health officer or any of his inspectors to notify in writing such owner, lessee, agent, tenant, or other person having charge of the premises upon which such nuisance is situated to have such nuisance abated within such time as said health officer or other inspector shall designate.

SEC. 3. No privy vault or cesspool used as a place of deposit for night soil within the District of Columbia shall be allowed to become filled within 2 feet of the general surface of the ground in its immediate vicinity, nor shall the contents of said privy vaults or cesspools be drained into any street, open lot, excavation, or hole in the ground, nor shall the contents thereof be covered with earth or other substance to remain in the ground.

SEC. 4. All cesspools or privy vaults within the District of Columbia shall be ventilated by means of a pipe at least 4 inches in diameter, and extend at least 8 feet above the roof of said privy house, or, if within 20 feet of a dwelling house, shall extend the same height (8 feet) above the roof of said house.

SEC. 5. That all the above sections are declared nuisances, injurious to health, and any person or persons violating either of said sections shall, on conviction, be fined not less than \$10 nor more than \$100 for every such offense.

SEC. 6. That all fines and penalties imposed by any section of this ordinance shall be collected by prosecution in the police or other proper court of the District of Columbia, by information filed in said court at the instance of the health officer; and whenever the nuisance complained of is set forth as continuing and existing, and is shown to be such to the satisfaction of the court before whom the person creating or maintaining said nuisance is tried, the party so offending shall, upon conviction thereof, in addition to the fine imposed, be ordered by said court to abate or remove said nuisance.

SEC. 7. That all ordinances, or parts of ordinances, of this board, inconsistent or in conflict with the foregoing provision of this ordinance, are hereby repealed.

Relative to the water supply and its condition, I beg leave to state that the water supply for the majority of the residents of Brookland is drawn from wells, varying in depth according to location. Many of these wells are now closed, the water being unfit for use. Impure water has long been recognized as one of the most potent causes of disease and death. That a vast number of cases of disease are attributable to the use of impure water is now no longer a matter of speculation, but has been demonstrated time and again by evidence of the most conclusive kind.

The injurious effects of drinking the well-water of this town, clearly demonstrated by chemical analysis and bacteriological tests, is pointed out, and so long as remains a single well whose waters are impure, so long will be the necessity for agitating this subject. The presence of organic matter, whether it has percolated through the soil from cesspools or other filth accumulations, into wells, converts drinking water into a dangerous poison fraught with disease and death, as there is always danger lurking in water which is known to be contaminated with animal matter; and the germ of disease which may be communicated in this way have a tenacity of life altogether beyond our knowledge. Too much stress can not be given the fact that a specimen of well-water as clear as crystal, and as far as sight, taste, or smell is concerned, pure, may be very impure. Under such existing conditions I can not urge too strongly the condemnation of these wells and the introduction of Potomac water to every household.

In concluding this report I beg leave to state that I have found during my investigations a belief entertained by many that a man has a right to do what he pleases on his own premises simply because he lives in the county. This doctrine, in order to be tenable, must always be qualified by the further proposition that a man has a right to do on his own premises, or elsewhere, what he pleases, provided he pleases to do nothing injurious to others. He should be taught that he can not do what violates the rights of others simply because he does it on his own premises. He should be taught that he has no right to endanger his own household, and perhaps set up a center of contagious or infectious disease, by neglecting or willfully refusing to employ proper means to keep his premises in proper sanitary condition. The public should have the right to forbid him the privilege of a residence unless he conform to regulations made for his own and the public good. The caprice of the individual must be subjected to the well-being of the whole. He who intelligently demands personal liberty for himself must respect it in all. Freedom and obedience to just law, properly tempering each other, constitute enlightened liberty.

Very respectfully,

O. T. BEAUMONT, *Sanitary Inspector.*

WILLIAM C. WOODWARD, M. D.,
Health Officer District of Columbia.

P. S.—Inclosed find separate report relative to every house in Brookland.

O. T. B.

NOTES OF THE INSPECTION AT BROOKLAND.

1. J. C., Bunker Hill road, rooms 10, family 2: Bath and water-closet in house leading to cesspool in yard; cesspool built of brick and cement; there is a drain pipe leading from cesspool to carry off liquid matter to a meadow below; cesspool has a movable top so that it can be examined. There is also a box privy on premises in good order. Heretofore the contents have been buried in manure pile. I have warned them not to repeat this violation of law.
2. R. S. W., Bunker Hill road, rooms 9, family 5: Box privy in good order; general condition seems to be good, with the exception that waste water from well finds its way back to well. Typhoid fever in this house.
3. D. R. T., Bunker Hill road, grocery store: House part unoccupied; premises were in a filthy condition when inspected, but on being notified immediately cleaned same.
4. S. B., Bunker Hill road, rooms 6, family 2: Box privy in good order; all conditions good.
5. L. B., Bunker Hill road, rooms 6, family 8: Box privy in good order; all conditions good.
6. C. McC., Bunker Hill road, rooms 9, family 5: Sanitary condition bad; privy without box or vessel; contents buried on premises; large accumulation of manure; proper notices served.
7. Brookland Hall, Bunker Hill road. Privy accommodations ample and good.
8. M., Bunker Hill road, rooms 20, family 3: These premises are used by the Catholic priests for sacred purposes. There is a cesspool in rear of house holding about 40 barrels of fecal matter, being the contents of three water-closets located within the house. Due notice was served and the cesspool cleaned by the Odorless Company the next day.
9. J. M. D., Seventh street, rooms 6, family 7: There is a water-closet and bath in house; the drain is carried underground to a gutter about 100 feet, where the pipe deposits the fecal matter.
10. W. F., University avenue, rooms 5, family 6: Conditions bad; full, filthy privy; surface drainage bad; water unfit for use.
11. A. G., University avenue, rooms 8, family 3: Conditions bad; box privy full and filthy; water unfit for use.
12. H. M. T., University avenue, rooms 7, family 6: Box privy in good condition; surface drainage poor; water unfit for use.
13. L. D., Eighth street, rooms 6, family 5: Box privy full and filthy, with a leaky box; conditions bad.
14. S. M. P., Eighth street, rooms 6, family 5: Box privy good; all surroundings good.
15. G. J., Eighth street, rooms 8, family 7: Box privy in good order; surface drainage poor; conditions bad.
16. J. W., Milwaukee street, rooms 8, family 6: Box privy in good order; all conditions seem to be good.
17. T. L., Milwaukee street, rooms 8, family 3: Box privy in good order; filthy drain from kitchen; water bad.
18. J. B. W., Providence street, rooms 8, family 8: Drain from kitchen to open lot; very bad drain from bath to street; box privy in good order.
19. C. S., Providence street, rooms 8, family 6: Box privy good; all conditions excellent.
20. C. G. L., Providence street, rooms 10, family 4: Bath drains to open lot; box privy good; all conditions fair.
21. F. M., Queen street, rooms 11, family 6: Bath and closet in house; drainage to cesspool in yard, can not be examined; drainage from this cesspool seems to flow to gutter along Baltimore and Ohio Railroad; box privy in yard in good order; surroundings seem good, with exceptions named.
22. D. M., Queen street, rooms 9, family 8: Bath and closet in house; drainage to cesspool in yard, can not be examined; drain from cesspool seems to drain to gutter along Baltimore and Ohio Railroad; other conditions good.
23. M. R., Lansing street, rooms 6, family 1: Box privy in fair order; bury contents of privy in yard; warned; premises clean.
24. Marist College, rooms 25, students and teachers 22: Three water-closets in house; drainage to cesspool; cesspool has a separator to divide solid from liquid matter; a pump is placed over liquid part which is pumped out to flow over ground. The solid matter has just been removed by Mr. Rusk. The drain from kitchen sink flows to another cesspool, which has a pipe leading to gutter in street to allow the liquid to flow thereto.
25. C. C., Queen street, rooms 7, family 2: Box privy good; all surroundings good.
26. W. D., Queen street, rooms 6, family 4: Bath in house, but no closet; drain from bath and kitchen to street; box privy good.

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27. J. C. W., Queen street, rooms 6, family 5: Bath in house; drainage to street; dry-earth closet in house; very offensive; no privy in yard; owner notified to erect privy and remove dry closet; other conditions good.
28. C. T. J., Hartford street, rooms 11, family 11: Baths, but no closet; drain from bath and kitchen sink to open lot; box privy, full and filthy; notice served.
29. J. R. T., Hartford street, rooms 7, family 4: Bath, but no closet; drain to open lot; box privy good; surroundings good.
30. W. W. N., Hartford street, rooms 8, family 3: Bath, no closet; drain from bath to open lot; box privy good; other surroundings good.
31. A. M., Hartford street, rooms 6, family 6: Privy without vessel; notified; surface drainage fair; conditions fair.
32. E. C. T. P., Eleventh street, rooms 6, family 3: Bath, no closet; drain from bath to ditch in rear of house; box privy good; surface drainage good.
33. H. B., Eleventh street, rooms 6, family 5: Bath in house; no closet; drains to open ditch in rear; box privy good; surface drainage good.
34. F. O., Eleventh and Frankfort streets, rooms 6, family 6: Box privy full and filthy; notified; other conditions good.
35. A. L. K., Dover street, rooms 7, family 4: Box privy good; all conditions good.
36. O. J., Dover street, rooms 5, family 2: Box privy good; all conditions good.
37. A. G. W., Concord street, rooms 5, family 4: Box privy in fair order; conditions fair.
38. J. M. M., Concord street, rooms 6, family 5: Box privy good; conditions good.
39. E. S., Concord street, rooms 6, family 5: Box privy good; all conditions good.
40. M. E. B., Concord street, rooms 6, family 3: Box privy in fair order; bury contents on premises; notified.
41. M. T., Concord street, rooms 7, family 4: Box privy in fair order; surroundings fair.
42. S. A. T., Concord street, rooms 7, family 2: Box privy in good order; surroundings fair.
43. E. C. F., Concord street, rooms 6, family 3: Box privy good; all conditions good.
44. A. L., Concord street, rooms 7, family 8: Box privy full and filthy; notified; other conditions good.
45. J. McP., Concord street, rooms 7, family 3: Box privy good; all conditions good.
46. M. S., Concord street, rooms 6, family 3: Box privy good; all conditions good.
47. J. H., Concord street, rooms 6, family 4: Box privy good; all conditions good.
48. A. G. M., Concord street, rooms 6, family 4: Box privy good; all conditions good.
49. C. La F., Concord street, rooms 7, family 6: Bath; drainage to low land in rear; box privy good; surroundings good.
50. M. T., Concord street, rooms 8, family 3: Box privy good; all conditions good.
51. G. R., Twelfth street, rooms 5, family 5: Box privy, metallic can; fair order; surroundings fair.
52. J. J. H., Galveston street, rooms 11, family 2: Box privy good; all conditions good.
53. J. M., Galveston street, rooms 8, family 4: Box privy good; surroundings good.
54. O. T. T., Galveston street, rooms 7, family 7: Box privy full and filthy; notified to have same cleaned; buried contents on premises.
55. F. D. M., Galveston street, rooms 7, family 4: Box privy good; surroundings fair.
56. S. M. G., Galveston street, rooms 8, family 5: Box privy full and filthy; notified; surroundings fair; drainage poor.
57. W. F. B., Galveston street, rooms 7, family 5: Box privy good; surroundings good.
58. Brookland public school: Box privies good; surroundings good.
59. J. S. P. G., Hartford street, rooms 7, family 7: Box privy good; all conditions good.
60. J. B., Hartford street, rooms 7, family 2: Box privy good; all conditions good.
61. M. A. J., Hartford street, rooms 6, family 3: Box privy good; drain from kitchen sink to open ditch; surroundings fair.
62. L. C. G., Hartford street, rooms 7, family 4: Box privy good; bury contents on premises; warned; surroundings fair.
63. J. L. W., Hartford street, rooms 7, family 3: Bath in house; drainage to low-land; box privy good; conditions good.
64. H. M. W., Hartford street, rooms 6, family 6: Box privy good; surroundings good.
65. G. B. C., Twelfth street, rooms 6, family 15: Box privy full and filthy; notified; other conditions good.
66. G. E., Frankfort street, rooms 5, family 3: No vessel in privy (hole in ground); notified; other conditions fair.
67. V. T. S., Frankfort street, rooms 8, family 8: No vessel in privy (hole in ground); notified; surroundings fair.
68. C. D., Frankfort street, rooms 6, family 3: Box privy good; all conditions good.
69. F. A. C., Frankfort street, rooms 5, family 5: Privy without vessel (hole in ground); notified; bury contents; surface drainage good.

70. C. R. F., Frankfort street, rooms 7, family 4: Privy without vessel (hole in ground); notified; bury contents; surface drainage good.
71. M. N., Frankfort street, rooms 7, family 4: Privy without vessel (hole in ground); close proximity to well; typhoid fever this summer; notified; other conditions fair.
72. B. B., Hartford street, rooms 7, family 4: Bath in house; drains to street gutter; box privy good; surroundings good.
73. C. H., Hartford street, rooms 10, family 4: Bath in house; drains to rear lot; box privy in good order; bury contents; warned; surface drainage good.
74. S. G. G., Hartford street, rooms 9, family 6: Bath in house; drains to garden; box privy good; bury contents; warned; other conditions good.
75. G. D., Hartford street, rooms 6, family 4: Box privy good; all conditions good.
76. J. S. N., Hartford street, rooms 9, family 5: Bath in house; drains to street; box privy good; bury contents; warned; other conditions good.
77. R. R., Thirteenth street, rooms 9, family 3: Bath in house; drains to street; box privy good; all conditions good.
78. R. T. K., Hartford street, rooms 8, family 6: Bath in house; drains to street; box privy good; surroundings fair.
79. J. L., Thirteenth street, rooms 10, family 3: Bath in house; drains to street; box closet good; bury contents; warned; surroundings fair.
80. J. E. E., Lansing street, rooms 7, family 4: Privy without vessel; bury contents; warned; surroundings fair.
81. R. M. P., Lansing street, rooms 8, family 2: Bath in house; drains to open lot; box privy good; surroundings fair.
82. Mrs. H., Lansing street, rooms 8, family 2: Box privy good; all conditions good.
83. H. B., Lansing street, rooms 9, family 3: Box privy good; all conditions good.
84. C. H. E., Lansing street, rooms 7, family 6: Box privy good; bury contents; warned; other conditions good.
85. J. W. L., Twelfth street, rooms 10, family 3: Box privy good; all conditions good.
86. F. McC., Providence street, rooms 13, family 6: Bath and closet in house, leading to cesspool in yard; cesspool full, and had been overflowing toward well of Mrs. M., in rear; cesspool is bricked, but does not seem to be cemented; should be condemned; notified to clear; the drain for kitchen leads to street gutter.
87. W. A. K., Eleventh street, rooms 8, family 4: Bath and closet in house, draining to barrels sunk in ground; the water passes from one barrel to another and thence to gutter in street; very foul and offensive; owned by I. H.; should be condemned.
88. I. H., Providence street, rooms 9, family 9: Bath and closet in house; drainage passes to barrels, one to another, thence to street gutter; foul and offensive; should be condemned; box privy on premises in good order.
89. E. S. M., Providence street, room 7, family 7: Closet and bath in house, leading to cesspool in yard; can not be examined; drains from cesspool to gutter; down spouts connected to cesspool to force contents out after rainfall; privy on premises without vessel; notified.
90. W. S., Providence street, rooms 8, family 3: Box privy good; all conditions good.
91. W. S. D., Providence street, rooms 8, family 4: Bath in house drains to open lot; box privy fair; bury contents; warned; surface drainage good.
92. R. R. W., Providence street, rooms 10, family 6: Bath and closet in house, connected to cesspool in yard; down spouts connected to cesspool to flood and carry contents to lowlands; box privy in yard in good order; surface drainage good.
93. T. C., Providence street, rooms 8, family 4: Box privy good; all conditions good.
94. T. G. H., Providence street, rooms 8, family 3: Box privy good; all conditions good.
95. A. L. J., Providence street, rooms 7, family 3: Box privy good; all conditions good.
96. D. M. W., Providence street, rooms 7, family 5: Bath draining to street; box privy good; surroundings good.
97. G. L. M., Providence street, rooms 7, family 2: Bath drains to street; box privy good; surroundings good.
98. P. H. McN., Newark street, rooms 9, family 8: Bath drains to gutter in street; drain from kitchen sink flows to street; box privy good; surface drainage good.
99. J. T. W., Newark street, rooms 7, family 4: Box privy in good order; all conditions good.
100. M. D. S., Newark street, rooms 5, family 3: Box privy in good order; surroundings fair.
101. C. N., Newark street, rooms 6, family 5: Box privy in good order; surroundings good.
102. L. G. L., Newark street, rooms 7, family 6: Box privy in good order; surroundings good.

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103. G. A. T., Newark street, rooms 5, family 4: Box privy good; surroundings fair.
104. C. W. J., Newark street, rooms 22, family 13: Box privy good; conditions fair.
105. J. R., Twelfth street, rooms 6, family 9: Box privy good; surroundings fair.
106. E. C. F., Twelfth street, rooms 6, family 3: Box closet in good order; surroundings good.
107. P. R., Twelfth street, rooms 7, family 3: Box privy good; surroundings good.
108. H. E. B., Twelfth street, rooms 7, family 4: Box privy in good order; surroundings good.
109. Mrs. P., Twelfth street, rooms 5, family 4: Box privy good; surroundings good.
110. Bunker Hill road, rooms 17, family 10: Bath and closet in house connected to cesspool in yard; can not be examined; box privy in yard good; surroundings good, except drain from pump.
111. M. B., Twelfth street, rooms 8, family 6: Box privy in good order; all surroundings good.
112. S. O., Bunker Hill road, rooms 13, family 14: Box privy in good order; drain from kitchen to gutter; surroundings fair.
113. C. E. D., Omaha street, rooms 6, family 5: Box privy good; all conditions good.
114. F. C., Philadelphia street, rooms 6, family 4: Water-closet in house leading to cesspool in yard; cesspool full and filthy; notified; other conditions good.
115. F. T. H., Philadelphia street, rooms 8, family 7: Box privy good; all conditions good.
116. J. C. B., Philadelphia street, rooms 7, family 6: Box privy good; surroundings fair.
117. H. E. M., Twelfth street, rooms 6, family 3: Box privy good; surroundings good.
118. A. M. G., Quincy street, rooms 6, family 3: Box privy good; surroundings good.
119. J. H., Quincy street, rooms 9, family 6: Box privy good; conditions good; surroundings fair.
120. S. H., Quincy street, rooms 12, family 9: Bath and closet in house; drains to gutter on Bunker Hill road; other conditions good.
121. C. A. J., Quincy street, rooms 6, family 5: Privy bad; surroundings fair; water in well filthy.
122. A. G. N., Quincy street, rooms 7, family 4: Box privy good; surroundings good.

REPORT ON THE WATER SUPPLY OF WASHINGTON, D. C.

By J. J. KINYOUN, Passed Assistant Surgeon, Marine-Hospital Service, and EDO.
ANDRADE-PENNY, M. D.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE,
Washington, D. C., December 27, 1895.

SIR: Referring to your letter of September 19, 1895, relating to the increase of typhoid fever in the District of Columbia, and requesting the Bureau to engage in a bacteriological analysis of water, I transmit herewith a copy of the report of P. A. Surg. J. J. Kinyoun, in charge of the hygienic laboratory, giving results of analyses made by himself and his assistant.

I have the honor to remain, respectfully, yours,

WALTER WYMAN,

Supervising Surgeon-General Marine-Hospital Service.

HEALTH OFFICER, Washington, D. C.

OFFICE OF THE SUPERVISING SURGEON-GENERAL,
MARINE-HOSPITAL SERVICE, HYGIENIC LABORATORY,
Washington, D. C., December 24, 1895.

SIR: We have the honor to submit the following as a report of a series of bacteriological examinations, undertaken by your direction, at the request of the health officer of the District of Columbia. The work was done in conjunction with Dr. G. M. Kober, medical sanitary inspector, who had been specially charged with the investigation of the prevalence of typhoid fever in the District of Columbia during the past summer and fall.

The examination of samples of water was commenced on or about September 24 and continued without interruption until December 13, 1895, during which time 135 examinations were made.

The samples of water intended for this study were collected under special precautions by Dr. Kober and immediately brought to the laboratory.

The time of collection was usually in the morning before the water had been disturbed. This was for the purpose of taking the sample under the worst conditions, because if there was sewage pollution it would be more in evidence at this time. This plan was followed in all save a few secondary samples.

All the bacteriological examinations were made with standardized culture media, in order to avoid the vexatious variations in results that would surely follow if this precaution were not taken.

The methods of isolating the bacteria from water are substantially the same as are recommended by others. At first, attempts were made to examine each sample for the number and classification of the bacteria, especially with reference to the presence or absence of the typhoid and colon bacilli, but this was abandoned in part, and our whole attention directed to the intestinal (colon) group of bacteria.

Preliminary to the examination, each sample was tested for the presence of fermentative bacteria, after the following manner: Five cubic centimeters of the suspected water were transferred to fermentation tubes containing freshly prepared lactose and glucose bouillon, respectively, and maintained at a temperature of from $41\frac{1}{2}^{\circ}$ to 42° C. for forty-eight hours; the tubes were then examined for gas production. If any were present they were subjected to a further examination. If no gas had been formed it was assumed that no fecal or sewage bacteria were present, and no further examination of the specimen was made.

In several instances the fermentation tubes were cloudy and contained motile bacilli, which produced no gas. These tubes were repeatedly examined by the usual methods for the typhoid bacillus, but in no instance was it found.

As soon as possible after the sample was received the water was examined for the number of bacteria contained in each cubic centimeter. Definite quantities were planted in plates of glycerinized agar, and grown at 20° to 25° C. After from forty-eight to sixty hours the colonies were counted.

If the sample of water indicated the presence of fermentative bacteria, especially if both lactose and glucose were fermented, the culture was plated over into lactose litmus agar (Wurtz) and kept at 37° C. for twenty-four to forty-eight hours. If at the end of that time any of the colonies had acted upon the litmus they were transferred to other media, viz, fermentation tubes, gelatin, gelatin plates, litmus milk, potato, and tested for the indol reaction.

It was the rule to find that the high temperature of 41° to 42° C. was sufficient to inhibit the growth of the other varieties of bacteria present, and in those fermentation tubes which contained gas it was unusual to find other than bacilli.

In the accompanying table reference is made only to bacilli and their reaction, except in the column in which the colonies are enumerated. This includes all forms.

Samples which indicated, by the preliminary fermentative test, sewage or intestinal bacteria were not usually examined a second time. If, on the other hand, a sample gave no such reaction, and there were facts pointing to its contamination, a second and other samples were required.

The secondary cultures demonstrated the fact that the bacterial contamination was of a variable quantity. Especially was this true with regard to wells. At one time a well in question would show nothing indicative of being contaminated with intestinal bacteria, and at another, one week later, they were present.

It is to be regretted that, owing to the large number of samples which it became necessary to examine, we were precluded from making secondary examinations from time to time in order to show the variation in the number of bacteria and the presence or absence of the fermentative forms.

The primary fermentative test, as suggested by Dr. Theobald Smith, has proven highly satisfactory. It can not be altogether relied upon as indicating the presence of fermenting bacteria, for in a few instances the primary cultures in both lactose and glucose gave gas formation; when they were subjected to plate cultures no colonies could be isolated which would ferment the same bouillon. Possibly this may be due to the hyperacidity, as suggested by Dr. Smith. But this does not seem applicable to all cases. We are inclined to believe that there may exist a symbiotic existence of bacteria, which together may possess this power, while independent they do not. This is a conjecture.

The majority of the specimens which showed the gas reaction, in both glucose and lactose bouillon, demonstrated on further culture the presence of the colon group of bacilli.

The character of the colonies in gelatin are described under an objective of low power, and has been applied to all. This, however, was not necessary in many instances, but for the sake of uniformity was done as a matter of routine.

The reaction of the bacilli to litmus milk has been of great aid in classifying the several varieties, which give the same reaction in Wurtz agar and gelatin.

The indol reaction was best demonstrated after the culture had been tested and left standing for twenty-four hours.

NUMBER OF BACTERIA.

The number of bacteria to a cubic centimeter of water is not a criterion of its purity. Some of the wells and springs contained great numbers, sometimes countless, yet they did not show that they were contaminated with any of the colon group. On the other hand, the converse was true; those samples containing as low as from 500 to 800 to the cubic centimeter contained a large number of fermentative (intestinal) bacteria. It must not be inferred, however, that waters containing large numbers of bacteria, even if they do show benign forms at the time of the examination, will continue to remain so. Sooner or later it is safe to assert that these will show the presence of sewage (intestinal) bacteria.

There were 70 examinations made of original samples of water, and 58 secondary examinations. From this number 21 bacilli were isolated, which answered in their morphological and cultural characters to the colon group.

Twenty-six samples contained bacilli which belong to the sewage group. In six other samples the microorganisms could not be isolated.

In the accompanying table the samples are classified either as contaminated with intestinal bacteria or as suspicious.

The Potomac water has also been examined, as will be seen, at intervals during this inquiry. The examinations, on the whole, make a better showing than the same number of wells. It was not found free from contamination. On two occasions intestinal bacilli were isolated, while more than one showed a contamination with sewage bacteria.

The number of bacteria in each cubic centimeter of Potomac water has not been above the average for this time of the year. In fact, they were less than were found in the water on a former examination. The source of the intestinal and sewage pollution can hardly be a question of doubt, since we know that it must originate from the feces of animals or of man. We are strongly inclined to believe that the origin of the intestinal bacteria was from sewage, because of the smallness of the number to each cubic centimeter, and the absence of other forms which occur when the water is contaminated by washings from the soil. During the time when the first four samples were taken dry weather prevailed and the river was low and the water clear.

In conclusion, we would state that it is our opinion, based upon this and other examinations made during the past four years, that the Potomac water is not at all times free from sewage pollution. No river water receiving as large a quantity of sewage as the Potomac, and this constantly increasing, can ever be above suspicion.

There are two schemes for remedying this condition. One is to own control of the watershed and abate the nuisances. This is not practi-

cable nor feasible. The other is the filtration of the water supply by the system now in successful use in several European cities, among which Hamburg and Zurich may be quoted as examples.

The condition of wells located on dairy farms needs no comment. The results speak for themselves. It is not improbable that if a comprehensive study be made of the water supply of the dairies supplying milk to Washington, our knowledge of the relation which the milk supply bears to the prevalence of intestinal and other diseases would be proportionately increased.

The use of surface wells in a city should on general principles be condemned. They are as a rule constantly exposed to contamination, and it appears to be only a question of time when they will be polluted with sewage. Where a better supply can be obtained other than these, it should at once be substituted, and this source of danger removed.

Respectfully submitted.

J. J. KINYOUN,

Passed Assistant-Surgeon, M. H. S.

EDO. ANDRADE-PENNY, M. D.,

Assistant.

SUPERVISING SURGEON-GENERAL,

UNITED STATES MARINE-HOSPITAL SERVICE.



TABLE SHOWING RESULTS OF BACTERIOLOGIC ANALYSES OF WELLS, SPRINGS, AND POTOMAC WATER IN THE DISTRICT OF COLUMBIA.

NOTE.—Wells marked with an Asterisk (*) are private wells.

NOTE.—Wells marked with an Asterisk (*) are private wells.																				
No.	Source.	Date.	No. of bac- teria.	Gas production. (Fermentation test, 5 c. c. of suspected water.)		Wurtz's litmus lactose agar.	Gelatine colonies slightly magnified.	Gelatine.	Motility.	Fermentation tube.				Litmus milk.	Potato.	Indol.	Remarks.			
				Lactose.	Glucose.					Lactose bullion.		Glucose bullion.								
										Reaction.	Gas formula.	Reaction.	Gas formula.							
1	Well, 4th and E sts. NE.	Sept. 24, 1895	725	Ferments.....	Ferments.....				Active.....								Coagulated fourth day.....	Consider- able. Trace.....	1 Suspicious.	
2	Do.....	Oct. 4, 1895	900	do.....	do.....		Red colonies.....	Round, brownish, granular, irregu- lar edges, slightly spreading.....	Does not liquefy.....	Slight.....	Acid.....	CO ₂ 1 H 5	Acid.....	CO ₂ 2 H 1			Not coagulated; heliotrope fifth day.....	White, elevated, dry.....	2	
3	Well, 1st and K sts. NE.	Sept. 24, 1895	34,800	do.....	do.....														3 Could not be isolated.	
4	Do.....	Sept. 26, 1895	1,500	do.....	do.....														4	
5	Well, G and 2d sts. NE.	Sept. 25, 1895	90	do.....	do.....														5	
6	Well, 2021 Seaton st.	Sept. 25, 1895	180	do.....	Ferments.....														6	
7	Do.....	Oct. 3, 1895	36,000	do.....	do.....														7	
8	Do.....	Oct. 27, 1895	12,100	Ferments.....	Ferments.....		Red colonies.....	Hyalin and slightly granular.....	Does not liquefy.....	Active.....	Acid.....	CO ₂ 1 H 3	Acid.....	CO ₂ 1 H 3			Coagulated third day; pink.....	Slight and dry.....	8 Intestinal bacillus.	
9	Mrs. Page's well, Takoma.....	Sept. 25, 1895	600	do.....	do.....				Slight.....	do.....	do.....	CO ₂ 1 H 1	do.....	CO ₂ 1 H 2				No apparent growth.....	None.....	9
10	Do.....	Oct. 27, 1895	12,800	Ferments.....	Ferments.....		Red colonies.....	Large, yellowish, granular, spread- ing.....	Does not liquefy.....	do.....	do.....	CO ₂ 1 H 1	do.....	CO ₂ 1 H 2			Coagulated third day; pink.....	Moist growth.....	10 Intestinal bacillus.	
11	Do.....	Nov. 14, 1895	2,900	do.....	do.....				Active.....	do.....	do.....	CO ₂ 2 H 2	do.....	CO ₂ 2 H 2			Coagulated third day; pink.....	Yellow, moist, spreading.....	11 Another sample taken later ferments glucose but not lactose.	
12	Spring at Takoma, rear B. and O.....	Sept. 26, 1895	3,960	Ferments.....	Ferments.....		Red and blue colonies.....	Brownish, dark centers, spreading.....	Does not liquefy.....	Slight.....	do.....	CO ₂ 1 H 3	do.....	CO ₂ 2 H 1			Coagulated third day; pink.....	Moist growth, slight.....	12 Intestinal bacillus.	
13	Do.....	Oct. 5, 1895	3,300	do.....	do.....		Red colonies.....	Brown, round, fleshy.....	do.....	Active.....	do.....	CO ₂ 1 H 2	do.....	CO ₂ 2 H 1			Coagulated fifth day.....	Yellowish, elevated, dry.....	13 Intestinal bacillus.	
14	Well, 11th and F sts. NE.	Sept. 26, 1895	10,700	do.....	do.....		do.....	Round, yellowish, granular, spread- ing.....	do.....	Slight.....	do.....	CO ₂ 1 H 2	do.....	CO ₂ 1 H 3			Not coagulated sixth; heliotrope.....	do.....	14	
15	Do.....	do.....	800	do.....	Ferments.....		do.....	Round, pale-blue hyalin.....	do.....	Active.....	Alkaline.....	CO ₂ 0 H 0	do.....	CO ₂ 0 H 0			Not coagulated sixth day; pink.....	Slight moist growth.....	15 Suspicious.	
16	Do.....	Oct. 25, 1895	Innumerable.	Ferments.....	do.....		do.....	Small, round, pale-blue hyalin.....	do.....	Slight.....	Acid.....	CO ₂ 1 H 4	do.....	CO ₂ 1 H 4			Coagulated fourth day.....	Slight moist colorless growth.....	16	
17	Well, R. S. Wolfe, Brookland.....	Sept. 27, 1895	2,160	do.....	Ferments.....		do.....	Round, slightly granular, hyalin, spreading.....	do.....	do.....	do.....	CO ₂ 1 H 2	do.....	CO ₂ 1 H 2			Coagulated third day; pink.....	Yellowish, elevated, moist, spreading.....	17 Intestinal bacillus.	
18	do.....	do.....	20,000	do.....	do.....														18	
19	do.....	Oct. 5, 1895	800	do.....	do.....														19	
20	Well, E, bet. 12th and 13th sts. SE.....	Oct. 1, 1895	840	do.....	Ferments.....		Red colonies.....	Coarsely granular, fleshy.....	Does not liquefy.....	Active.....		CO ₂ 0 H 0		CO ₂ 0 H 0			Coagulated sixth day; heliotrope.....	do.....	20 Suspicious.	
21	Do.....	Oct. 15, 1895	525	Ferments.....	do.....			Round, granular, fleshy.....	do.....	Slight.....	Acid.....	CO ₂ 0 H 0		CO ₂ 0 H 1			Coagulated sixth day; heliotrope.....	White, elevated, moist, spread- ing.....	21 Suspicious.	
22	Well, 7th and B sts. SE.	Oct. 2, 1895	220	do.....	do.....			Round, brown, granular.....	do.....	Active.....	do.....	CO ₂ 0 H 0		CO ₂ 0 H 0					22	
23	Spring, Franklin Square	Oct. 24, 1895	800	do.....	do.....														23	
24	Do.....	Oct. 24, 1895	400	do.....	do.....														24	
25	Well, 730 20th st. NE.....	Oct. 3, 1895	7,920	Ferments.....	Ferments.....		Red colonies.....	Yellowish, granular, spreading.....	Does not liquefy.....	Slight.....	Alkaline.....	CO ₂ 0 H 0	Acid.....	CO ₂ 0 H 0			Coagulated fourth day; heliotrope.....	Yellowish, elevated, moist.....	25 Suspicious.	
26	Well, E, bet. 6th and 7th sts. SE.....	Oct. 2, 1895	180	do.....	do.....														26	
27	Do.....	Nov. 21, 1895	0	do.....	Ferments.....														27	
28	Well, N. Cap. st. above R st.	Oct. 8, 1895	165	Ferments.....	do.....		Red colonies.....	Hyalin, irregular edges, spreading.....	Does not liquefy.....	Slight.....	Alkaline.....	CO ₂ 0 H 0	Acid.....	CO ₂ 0 H 0			Coagulated fifth day.....	White, elevated, dry.....	28 Suspicious.	
29	Do.....	Oct. 21, 1895	2,700	do.....	do.....					Active.....	Acid.....	CO ₂ 0 H 1	do.....	CO ₂ 1 H 1			Coagulated third day.....	Yellowish, moist, elevated, spreading.....	29	
30	Do.....	Nov. 1, 1895	600	do.....	do.....		Blue colonies.....	Pale blue, granular, irregular edges, spreading.....	Does not liquefy.....	do.....	do.....	CO ₂ 1 H 4	do.....	CO ₂ 1 H 3			Coagulated fourth day.....	White, yellowish, elevated, moist.....	30	
31	Well, rear No. 8 Minnesota ave.	Oct. 9, 1895	120	do.....	do.....														31	
32	Well, No. 9 Minnesota ave., Anacostia.....	Oct. 25, 1895	24,000	Ferments.....	do.....		Blue and red colonies.....	Pale, granular, irregular.....	Liquefies.....	Slight.....	Acid.....	CO ₂ 0 H 0	Acid.....	CO ₂ 2 H 1			Coagulated second day; heliotrope.....	White, elevated, dry.....	32 Suspicious. Proteus vul- garis.	
33	Well, 27th and K sts. NW.....	Oct. 9, 1895	700	do.....	Ferments.....														33 Repeated trials failed to isolate the fermenting bacteria.	
34	Do.....	Oct. 24, 1895	300	do.....	do.....														34 Suspicious. Same as above.	
35	Well, N. J. ave. and Pierce st.	Oct. 9, 1895	800	do.....	do.....														35	
36	Do.....	Nov. 19, 1895	200	Ferments.....	Ferments.....														36	
37	Well, 463 Jefferson st.	Oct. 9, 1895	700	Ferments.....	Ferments.....														37 Suspicious. Fermenting bacteria could not be isolated.	
38	Do.....	Oct. 25, 1895	1,500	do.....	do.....														38	
39	Well, cor. 23d and M sts. NW.....	Oct. 9, 1895	400	do.....	do.....														39	
40	Well, M st., near 23d NW.....	Nov. 20, 1895	0	do.....	do.....														40	
41	Well, cor. 23d and M sts. NW.....	Nov. 2, 1895	10,500	Ferments.....	Ferments.....														41 Suspicious. Fermenting bacteria could not be isolated.	
42	Well, 10th and N sts. NW.....	Oct. 9, 1895	330	do.....	do.....		Red colonies.....	Pale yellow, granular.....	Does not liquefy.....	Active.....	Acid.....	CO ₂ 1 H 4	Acid.....	CO ₂ 3 H 1			Coagulated third day.....	Yellowish, moist, spreading.....	42 Intestinal bacillus.	
43	Do.....	Oct. 25, 1895	Innumerable.	do.....	do.....														43	
44	Do.....	Nov. 19, 1895	700	do.....	do.....														44	
45	Well, cor. 4th and M sts. NW.....	Oct. 1, 1895	1,700	do.....	do.....														45	
46	Do.....	Nov. 2, 1895	2,600	Ferments.....																

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REPORT OF DR. J. D. HIRD, CHEMIST.

ON WATER SUPPLY OF DISTRICT OF COLUMBIA.

DISTRICT OF COLUMBIA, HEALTH DEPARTMENT,
Washington, December 30, 1895.

SIR: I have the honor to submit herewith the results of the analyses of certain well and spring waters submitted to me by Dr. Kober, special medical sanitary inspector, in his investigation into the prevalence of typhoid fever within the District of Columbia.

Very respectfully,

J. D. HIRD, *Chemist.*

WILLIAM C. WOODWARD, M. D.,
Health Officer, Washington, D. C.

Chemical analyses of waters from wells, springs, and cisterns made in connection with the investigation into the prevalence of typhoid fever within the District of Columbia.

[Results expressed in parts per million.]

Date.	Location.	Nitrogen as—				Chlo- rine.	Oxygen con- sumed.	Remarks.
		Free ammo- nia.	Albu- minoid ammo- nia.	Ni- trites.	Ni- trates.			
1895.								
July 21	4th and E sts. NE.....	0.00	0.00	Trace.	16.00	49.00	0.6	Good.
Mar. 21	1st and K sts. NE.....	.00	.006	0.00	6.00	45.00	.44	Do.
Nov. 12	2d and G sts. NE.....	.006	.012	.0015	27.00	84.00	.52	Suspicious.
Sept. 16	Mrs. Page, Takoma, D. C.*	.00	.078	Trace.	5.00	6.00	.....	Surface drain- age.
Sept. 25	Spring, Takoma, rear E. O.*	.009	.02	.00	3.5	9.00	.6	Good.
Nov. 12	Public well, 11 F st. NE.	.00	.00	Trace.	18.00	32.00	.6	Do.
Oct. 2	The Takoma spring*...	.00	.00	.00	.00	4.00	.37	Do.
Nov. 12	E st. bet. 12th and 13th SE.	.005	.004	Trace.	25.00	57.00	.52	Do.
Do....	Public well, 7th and B sts. SE.	.214	.006	.009	24.00	40.00	1.00	Contaminated.
July 11	Franklin Square spring.	.003	.019	.00	22.00	53.00	.84	Good.
Nov. 12	Well, 730 20th st. NE*.	.028	.036	.004	31.00	80.00	1.48	Contaminated.
Do....	Public well, E st. bet. 6th and 7th SE.	.00	.016	Trace.	17.00	38.00	.48	Good.
Nov. 15	Public well, N. Cap. above R.	.016	.014	.0005	5.00	20.00	1.3	Do.
Oct. 29	Well No. 9, Minnesota ave., Anacostia.	.002	.006	.00	5.00	8.00	.6	Do.
Nov. 14	Public well, 27 K st. NW.	.00	.024	.00	40.00	102.00	.72	Contaminated.
Jan. 30	Public well, New Jer- sey ave. and Piercest.	.01	.025	.00	14.00	62.00	1.04	Good.
Oct. 29	Well, 433 Jefferson st*.	.035	.03	Trace.	2.5	7.00	.92	Do.
Nov. 14	Public well, 23 M st. NW	.004	.032	Trace.	80.00	255.00	.8	Contaminated.
Nov. 12	Public well, 10 N st. NW	.00	.004	Trace.	22.00	60.00	.56	Good.
Nov. 15	Public well, 4 Mst. NW	.004	.018	Trace.	25.00	72.00	.44	Do.
Nov. 16	Cistern, Elligood, Ivy City.*	.152	.32	.01	.8	1.5	14.4	Contaminated.
Do....	Well, D. G. Cleveland, Ivy City.*	.03	.04	.00	.00	19.00	1.5	Good.
Do....	Well, 132 Central ave., Ivy City.*	.185	.123	.00	.5	33.00	3.5	Contaminated.

* Not public.

1352 REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA.

Chemical analyses of waters from wells, springs, and cisterns made in connection with the investigation into the prevalence of typhoid fever, etc.—Continued.

[Results expressed in parts per million.]

Date.	Location.	Nitrogen as—				Chlorine.	Oxygen consumed.	Remarks.
		Free ammonia.	Albuminoid ammonia.	Nitrites.	Nitrates.			
1895.								
Oct. 22	Well 411 6½ st. SW.*...	.177	.03	.011	00.00	133.00	.....	Contaminated.
Nov. 1	Well, 1614 Valley st....	.006	.018	.00	18.00	65.00	.5	Good.
Oct. 2	Well, H. W. Scannel*..	.105	.205	.00	1.00	5.00	3.8	Contaminated.
Do....	Well, M. Beuchert 430 K st. NW.*	.815	.03	.01	.6	42.00	1.8	Do.
Nov. 15	Well, power house, Brightwood.*	.008	.094	.00	1.00	15.00	1.9	Surface drainage.
Do....	Spring, Piney Branch*.	.006	.034	.00	3.00	12.00	.48	Good.
Nov. 6	Well, 641 Sheridan ave.*	.215	.015	.011	18.00	45.00	1.1	Contaminated.
Do....	Well, 739 Sheridan ave.*	.03	.1	.015	38.00	90.00	5.6	Do.
Nov. 12	Mst. bet. 4½ and 6th sts. SW.	.00	.032	.0005	50.00	108.00	1.3	Do.
Nov. 23	Artesian well, Palais Royal.*	.008	.045	.001	Trace.	8.00	.6	Good.
Do....	Columbia lithia water*.	.055	.03	.009	29.00	135.00	1.4	Contaminated.
Dec. 6	.....do.....	.036	.077	.004	28.4	128.00	1.12	Do.
Nov. 20	Well, Mr. Hall, Takoma.*	.04	.03	Trace.	Trace.	7.00	1.00	Good.

* Not public.

REPORT OF S. C. BUSEY, M. D., AND G. M. KOBER, M. D., ON
MORBIFIC AND INFECTIOUS MILK.

WASHINGTON, D. C., *September 1, 1895.*

SIR: We have the honor to transmit herewith the results of our investigation into morbid and infectious milk, and the necessity for sanitary control of dairies.

It is but just to state that, however laborious this work has proved, it could not have been accomplished without the aid of the Index Medicus and the library of the Surgeon-General's Office, and it therefore affords us great pleasure to express our especial obligations to Dr. John S. Billings, the distinguished sanitarian, to whose untiring zeal and devotion to the cause of American medicine the inception and completion of the index catalogue is due.

We also tender thanks to our friend Dr. S. S. Adams for valuable assistance in the preparation of the report, and to Messrs. Clark, Hall, and Rose, of the library of the Surgeon-General's Office, for many courtesies extended to us.

Respectfully,

SAMUEL C. BUSEY, M. D.
GEORGE M. KOBER, M. D.

WILLIAM C. WOODWARD, M. D.,
Health Officer, Washington, D. C.

MORBIFIC AND INFECTIOUS MILK.

In view of the importance of milk as an article of diet for infants, children, invalids, the sick, and convalescents, it is perfectly natural that much attention should have been given to the study of this food stuff, and that of late years the sanitarian and bacteriologist should also have found it a profitable field for research.

Few countries until recently have deemed it necessary to do more than prevent adulteration of the milk, and many of our legislators appear to think that as long as the milk has not been skimmed or watered, and contains the standard of 12 or 13 per cent of total solids, we need not worry about the germs we eat or drink. This may be a pleasing reflection to persons who do not know that such hydra-headed diseases as scarlet fever, diphtheria, and cholera infantum have been disseminated in the milk supply, that typhoid fever epidemics have been thus caused, and that milk may be the vehicle of the germs of tuberculosis and other infectious diseases and morbid agents.

For the sake of completeness we will refer to all the conditions likely to affect the quality of the milk and thereby render it morbid, and divide the subject into several groups.

SECTION 1.

MILK WHICH IS OBJECTIONABLE BY REASON OF COLOR, ODOR, TASTE, AND CONSISTENCY.

(a) *Abnormally colored milk.*—Fuchs (1) was the first to point out that blue and yellow colored milk may be due to the presence of chromogenic microorganisms, and Neelson (2), in 1880, and Hueppe, in 1881, proved that blue milk was caused by the bacillus cyanogenus, which may even invade the udder of the cow. Mosler (3) and Uffelmann refer to cases of gastrointestinal catarrh, produced by the consumption of such milk. The color produced by chromogenic germs is usually superficial, and, according to Schröter, is due to the development of various anilines, such as aniline blue and fuchsin, from the casein; a uniform blue color is imparted by adulteration with water and certain kinds of cows' feed, and by some drugs.

Yellow milk may be due to the addition of coloring matter such as annatto or saffron or the development of the bacillus synxanthus (Schröter), but may also be caused by the injection of rhubarb (Mosler). Red milk may be caused by rhubarb or the presence of the *B. prodigiosus*, the *spirillum rubrum*, the admixture of blood, especially when the milk looks streaky, but is most frequently due to feeding the animals madder or bedstraw. Brown milk may be due to the presence of foreign matter or the products of certain fungi. A bluish-red color is caused by the bacterium *lactis erythrogenes* (Hueppe), while green milk is generally the result of an excess of fat and incomplete emulsification, sometimes due to the presence of the bacillus fluorescens, and occasionally, as in suppurative affections of the udder, to the presence of green pus.

(b) *Abnormal odor, taste, and consistency.*—This may be caused by the character of the food, exposure of the milk to air charged with foul vapors as shown by Tait (8), or the presence of foreign matter. The odor of onions is imparted when any of the alia are eaten, and after the injection of even a small quantity of skunk cabbage the milk yields the characteristic odor. The consumption of turnips, cabbage, or decaying leaves frequently affects the flavor of the milk. Milk is said to acquire a bitter taste after the injection of wormwood or when the animal suffers from disease of the liver interfering with the proper elimination of the biliary acids and salts, but is most frequently due to the presence of certain forms of bacteria, most frequently present in dark, damp, and badly ventilated milk houses; a salty milk often results from cattle grazing upon marshy salt grasses.

Occasionally we see a stringy or filamentous milk which, according to Schmidt-Mülheim, may be due to the presence of certain micrococci, very generally found in dirty milk pans or other utensil; sometimes the milk is slimy, and several species of bacteria have been described as the cause of this condition; chief of these organisms is the bacillus *lactis viscosus*, isolated by Adametz. In rare instances milk presents a soapy taste, which, according to Weigmann, is due to a specific bacillus. It is needless to add that all such milk is unfit for use; indeed, there is very little danger from this source, as few persons would accept such milk and fewer still will be found willing to take chances in selling the milk, although they may work it off with other milk. The matter, however, is of even greater interest to the dairyman on account of the possible loss involved in such infections.

(c) *Colostrum milk* and the milk yielded three to five days before calving differs in composition from normal milk; the former frequently



PHOTOMICROGRAPH OF MILK SEDIMENTS (WASHINGTON, D. C.) BY DR. WM. M. GRAY, U. S. ARMY
MEDICAL MUSEUM.

Magnified 200 times.



contains blood corpuscles from the vaginal passages. Dr. Heisch (10) reports the case of a family using such milk who were attacked with symptoms resembling severe influenza, with high fever and great soreness of the inside of the mouth, throat, and tongue, which were covered with small pustules. The servants, who took only the skimmed-milk, remained unaffected. One child who for two days refused everything but water got pretty well rid of her symptoms, but they returned as soon as she began to use the milk, which led to the examination of the milk, which was found to contain pus and blood corpuscles, also colostrum or a body closely resembling it. According to Höhne (11) milk yielded by animals a few days before calving has induced diarrhea and colic in the consumers.

(d) *Milk sediments*.—Every consumer of milk has doubtless observed the presence of more or less foreign matter found at the bottom of the vessel or bottle in which it is kept; indeed, it is a matter of such common occurrence that it hardly excites our attention, and many are disposed to look upon it as a matter of course. Professor Soxhlet (136), of Munich, was perhaps the first to point out that these deposits are largely made up of excrementitious matter from the cow, which, adhering to the udder of the animal, gained access to the bucket in the act of milking. Professor Renk (12), of Halle, brought this subject to the attention of the section of hygiene at the International Medical Congress, held in Berlin in 1890, and no one of his audience is likely to forget the valuable object lesson presented by him.

Having been impressed with Soxhlet's investigation and from frequent personal observation of these impurities in his own milk supply, he determined to ascertain the average amount of filth sold with each liter (about 1 quart) of milk. For this purpose he secured samples from different dairies which supplied the city of Halle, and permitted them to settle for two hours, after which he decanted half of the top milk and added the same quantity of distilled water, and repeated this process several times until the foreign matter was suspended in pure water. He then weighed his filtering paper, collected the sediment on this filter, which he dried at a temperature of 212° F., and weighed it again to determine the exact amount of foreign matter. A number of these filtrates, pasted behind a large pane of glass and framed for permanent exhibits, presented various shades in color of gray, green, and brown, each representing the amount of filth contained in a liter of milk, and furnished at once a positive index of the degree of cleanliness observed at the various milk farms. Professor Renk extended his investigation to other German cities and found the average weight, dried, in a liter of milk was at Leipzig, 3.8 milligrams; Munich, 9 milligrams; Berlin, 10.3 milligrams; Halle, 12.2 milligrams.

These filtrates were so disgusting in appearance that we were not disposed to accept them as a standard for American milk, and with the courteous consent of Dr. Woodward, health officer of this city, Professor Hird kindly prepared for us filters from 24 specimens of Washington market milk taken at random, with the result that they presented even a greater amount of impurities, weighing all the way from 5 to 30 milligrams per pint and quart, and as fecal matter contains about 85 per cent of moisture, the weight of undried filth in the maximum specimen would have been about 180 milligrams per quart.

Now, it is not at all likely that the average American housewife would tolerate anyone to throw that amount of filth into her milk pitcher, and yet practically we suffer it to be done, and there is no law to prevent it.

These matters are hardly brought home to us when we talk about so many grains or grams of filth. Indeed, there is nothing so effectual as an object lesson, which every consumer can prepare for himself in the manner indicated, and if this should prove too tedious, it is simply necessary to examine the bottom of an average milk bottle after standing a few hours.

If these sediments are subjected to microscopical examination we will find, as shown in the accompanying microphotographs, prepared through the kindness of Surgeon Reed by Dr. Gray, of the Army Medical Museum, that they are composed of epithelial debris, hairs of the cow, excrementitious matter, vegetable fibers, organic and inorganic dust particles, bacteria, fungi, and spores of every description—fully 90 per cent of the germs are fecal bacilli—all of which is not only disgusting, but extremely suggestive of danger.

The number of microorganisms in such milk is largely increased and while there is no evidence that milk of this description, when taken perfectly fresh, has proved injurious to the consumer, we know that bacterial development and consequent decomposition is materially hastened in such a medium, and that the conversion of lactic sugar into lactic acid, apart from impairing the nutritive value, may cause gastro-intestinal disorders in delicate infants.

Dr. H. C. Plaut (12*b*), of Leipsic, found as a rule that in warm weather the so-called fresh milk delivered in the morning has already passed the period of incubation and is unfit for use by young children, and of 47 infants whose milk supply was carefully investigated by him, 18 developed, under such conditions, digestive disorders, and 6 died.

The greatest danger from milk of this class is the possible presence of tyrotoxin and other toxins or bacterial products. Professor Vaughan believes that the former poison is developed by the growth of a germ, which under favorable conditions multiplies with astonishing rapidity. The presence of the very filth referred to, a summer heat, and the pernicious habit of placing the milk before cooling in covered cans or bottles, perhaps dirty besides, constitute favorable environments for the development of this poison.

Cases of poisoning by milk and ice cream were reported long before we knew the nature of this poison, by Haschek (13), Hagner (14), Cameron (15), and Barruel, Orfila, Marjolini, Bonorden, Hasset, Schroff, and others, quoted by Husemann (137), with symptoms of nausea, vomiting, dryness, and a sense of constriction of the throat, vertigo, colic, purging, with a tendency in some cases to collapse, in others to numbness of the extremities and stupor.

In 1884 Vaughan isolated a poison found in poisonous cheese and called it tyrotoxin (15*b*); in November, 1885, he found the same substance in old milk; in June, 1886, he demonstrated its presence in poisonous ice cream, and in milk which had already undergone lactic-acid fermentation, and called attention to the probable relation of tyrotoxin to cholera infantum and other kindred diseases (16). In July, 1886, he found this poison in a sample of milk which had evidently caused the symptoms of cholera infantum in a babe 7 months of age (17*c*). In April, 1887, Dr. Stanton, the health officer of Cincinnati, demonstrated tyrotoxin in poisonous cream puffs. Professor Vaughan's views on the relation of this poison and saprophytic germs to cholera infantum and the summer diarrheas in bottle-fed children, so well presented in his articles of acute and chronic milk infection (18), are gaining ground and will doubtless lead to a great reform in the management of dairies. Flügge (*Zeitschrift Hygiene*, July, 1894) found among the



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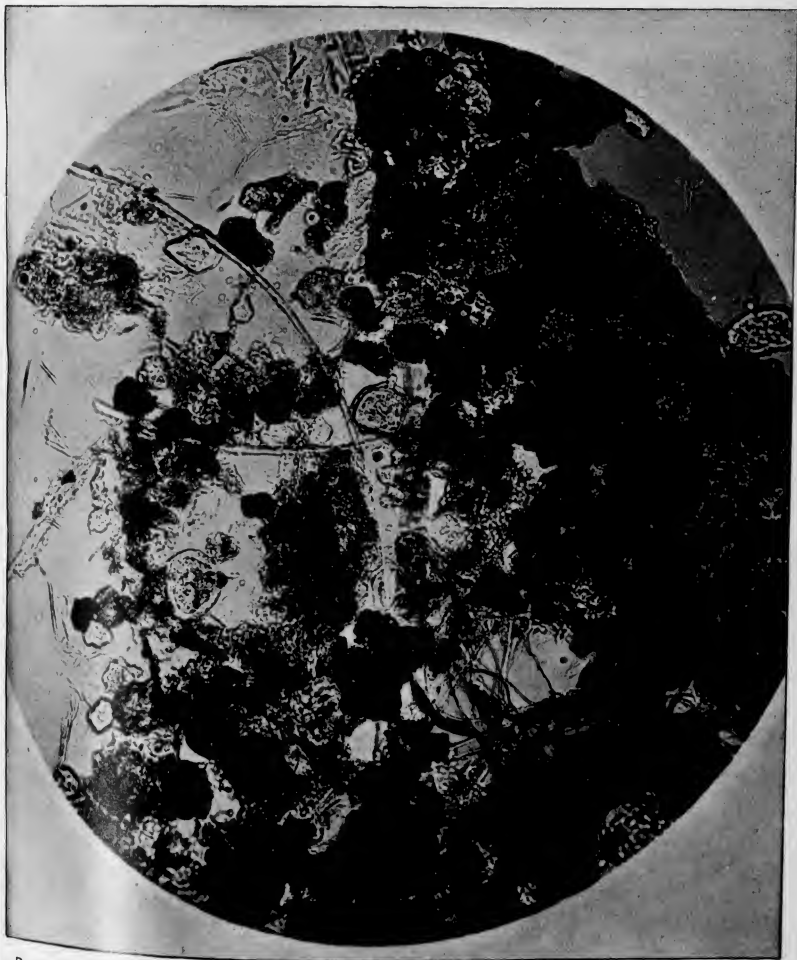
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milk bacteria, especially those which are liable to resist the temperature of boiling, several varieties capable of evolving toxins, and Baginsky is also of the opinion that the intestinal disorders of infants are due to these poisonous products of germs.

ILLUSTRATIVE CASES OF POISONING BY MILK AND MILK PRODUCTS.

In 1866 Dr. Haschek (13) reported the case of a woman who had taken about a pint of milk, and four hours afterwards was taken ill with violent pain in the stomach, frequent vomiting and purging, tympanitic abdomen, small and frequent pulse, cold skin, etc. This woman, in consequence of her condition, aborted and died forty-eight hours after taking the suspected milk. It was supposed that the milk would contain some acrid poison, but an analysis of both the milk and contents of the stomach failed to demonstrate the presence of an organic or inorganic poison, while the autopsy revealed congestion of the gastrointestinal mucosa and small pale erosions of the membrane near the pyloric extremity.

Dr. C. E. Hagner (14), of Washington, D. C., reports the history of a family wherein seven persons were attacked with vomiting and purging of a violent character, accompanied with a burning pain in the stomach and cramps in the bowels and extremities, with a weak pulse, cool skin, and bathed with profuse sweat. One patient was so weak she could hardly speak. While four out of the seven patients had eaten mince pie at 4 o'clock p. m., suspicion pointed to the milk, from the fact that all had taken milk at 9 o'clock p. m. and the first symptoms appeared about midnight.

The milk had been obtained from the dairy in a large can, from which it had been transferred into a small one, having a small mouth, rendering cleaning difficult. The analysis of the milk made at the Army Medical Museum showed nothing abnormal, except slight traces of salts of tin. All the patients recovered.

In December, 1881, Dr. Smyly (15) was called to see three children who were suffering from severe abdominal pains, with fever, furred tongue, and gastric symptoms, such as are usually present in the earlier stage of enteric fever. As these children had taken uncooked milk, Dr. S. concluded that the fons et origo of their illness was the milk they had been using so liberally. Dr. Cameron (15), the health officer, was called to see the patients and found them exceedingly ill, and the youngest, a baby about a year old, appeared to be dying. He naturally examined the milk, and found the cream which had risen to the top presented a deep-brown color. Upon inspection of the dairy, and pressing the milk vendor for an explanation of the curious color of the cream, he was informed that a lad milked the cows early in the morning, without a light, and omitted to wash the teats of the cows before milking, and as some of the cows had lain all night in such a way that their udders were in contact with the manure, their teats were covered with filth, which naturally contaminated the milk. The chemical analysis of the milk showed it to be normal, as it contained water, 87.10 per cent; fats, 3.56; other solids, 9.34.

Microscopical examination, however, revealed the presence of cows' hair, minute particles of straw, and debris of organic matter, numerous monad, vibrios, and bacteroid bodies; the odor of the cream was slightly but distinctly unpleasant, and Dr. Cameron, while not a believer in the pythogenic theory of typhoid fever, thinks a disease closely resembling typhoid fever was apparently produced by the pres-

ence of decomposing animal matter in the milk drunk by the patients, who fortunately all recovered.

We now know, thanks to the labors of Professors Vaughan, Booker, and Jeffries, of our own country, and of Escherich and Baginsky, in Germany, that these symptoms are due to the presence of chemical poisons, evolved by one or more species of saprophytic germs.

The circumstances which led to the discovery and isolation of tyrotoxicon were as follows:

In 1883-84 about 300 persons were taken violently sick after eating cheese, with symptoms of vomiting, watery diarrhea, pain in the gastric region, tongue coated at first, afterwards red and dry, pulse soft and irregular, dryness of the mouth and throat with a sense of constriction, headache, sometimes double vision, and marked nervous prostration, symptoms closely resembling those of sausage, canned meat, and fish poisoning. Dr. Vaughan was requested by the State board of health of Michigan to ascertain the cause of this sickness, and while engaged in this work he discovered in the cheese a substance which he called tyrotoxicon (15*b*), and which he believed to be a poison evolved by bacterial life.

In July, 1885 (17), in an additional report to the State board of health on poisonous cheese, he calls attention to the fact that numerous instances of this kind have occurred in North German countries* and in the United States, and that a few years ago the reputation of a large cheese factory in northern Ohio was ruined by the great number of cases of alarming illness from eating its cheese, which dairymen know as "sick" cheese, and quotes a German author, who says:

The numerous kinds of soft cheese prepared in families or on small farms are generally the cause of the symptoms, while it is quite exceptional to hear of symptoms arising from the use of cheese prepared in large quantities.

This is at variance with Vaughan's experience, as the cheese previously referred to was made at one of the largest and best factories in the State.

Unfortunately poisonous cheese can not be distinguished in appearance from good cheese, and yet animals, probably due to an acuteness of the sense of smell, will select the good cheese; but Dr. Vaughan proposed a test, while not free from error, which is the most reliable ready means now known to detect the poisonous cheese, and every groceryman should apply this test to each fresh cheese which he cuts:

Press a small strip of blue litmus paper against the freshly cut surface of the cheese. If the paper is reddened instantly and intensely the cheese may be regarded with suspicion. When treated in this way any green cheese will redden the litmus paper, but in wholesome cheese it will be produced slowly and the reddening will be slight.

In November, 1885 (16), he isolated the same poison in a sample of milk which had been kept in a close-stoppered bottle for about six

* Husemann (137), in discussing poisonous cheese, states that intoxications of this character have been reported in the sixteenth century (Strappe). Hennemann in 1823 reported a series of cases; also Camerer in 1832; Hiinefeld, Westrumb, Witting, Brück, and Fischer in 1836; Prollins in 1841; Lengebusch in 1846, and Zenker in 1850. These reports cover most of the cases which occurred in Germany and Russia.

The London Lancet of June 21, 1862, page 670, calls attention to 22 cases with 2 deaths among members of the Burley Rifles attributed to eating American cheese, which had "nothing peculiar in its outward characters or in its chemical composition," and concludes: "As experience is too dearly bought at the expense of an attack with choleraic symptoms, until chemists favor us with some more definite information on this subject we would advise an abstinence from decayed cheese in general, and from American cheese, in whatever condition, in particular."





PHOTOMICROGRAPH OF MILK SEDIMENTS (WASHINGTON, D. C.) BY DR. WM. M. GRAY, U. S. ARMY
MEDICAL MUSEUM.

Magnified 200 times.

months. In June, 1886 (16), he demonstrated its presence in poisonous ice cream and in milk which had already undergone lactic acid fermentation, and called attention to the probable relation of tyrotoxinon to cholera infantum and kindred diseases. In July, 1886 (17*b*), he found this poison in a sample of milk which evidently had caused the symptoms of cholera infantum in a babe 7 months of age. He found that the child had been vomiting quite constantly for some three hours; it had also passed watery stools some six or seven times. The eyes were sunken, skin cold and clammy, and pulse rapid and small.

In August, 1886, Drs. Newton and Wallace (17*c*) reported that on the 7th of August 24 persons were taken sick after supper at one of the hotels at Long Branch, and the same evening 19 persons were taken sick at another hotel. From one to four hours had elapsed between the last meal and the first appearance of symptoms which were those of gastrointestinal irritation similar to poisoning by any irritating material, i.e., nausea, vomiting, cramps, and collapse; a few had diarrhea, while dryness of the throat and a burning sensation in the esophagus were prominent symptoms. Just one week after the first series of cases 30 persons were taken sick at another hotel with precisely the same symptoms as noted in the first outbreak. The physicians were enabled to eliminate all other articles of food, and, being familiar with Vaughan's discovery of tyrotoxinon in cheese, naturally directed their attention to the milk, and were so fortunate as to demonstrate the presence of this poison in a sample obtained during the second outbreak. The authors also found that the cows were milked during the night and attribute the production of this poison to improper management of the milk, believing that if the milk had been cooled after it was drawn from the cows before being placed in the cans fermentation would not have ensued and the resulting material, tyrotoxinon, would not have been produced.

In April, 1887, Dr. Stanton (17*c*), the health officer of Cincinnati, reported several cases of poisoning by tyrotoxinon in cream puffs. In the 13 patients who had eaten puffs from a particular bakery there were in most of them, in from one to three or four hours after partaking of the puffs, symptoms of nausea, followed soon by vomiting and later by purging. In some cases these symptoms were persistent. There was in all a sense of burning in the throat, stomach, and bowels, and great thirst, with headache in the severer cases. Tyrotoxinon was actually isolated from some of the cream puffs.

SECTION 2.

MILK MAY BE RENDERED UNFIT FOR USE BY IMPROPER FOOD AND CARE OF THE ANIMAL.

The disease described as milk sickness or trembles by some American writers (19), and characterized by great weakness, constipation, vomiting, fetor of breath, and muscular twitchings, is believed to be due to cows feeding on *Rhus toxicodendron*. The evidence on this subject is, however, conflicting. Cases of diarrhea, and even severe forms of gastroenteritis, have been traced by Sonnenberger (20), Ratti (21), and Mackay (22) to the milk of cows and goats feeding upon meadow saffron and euphorbiaceous plants. The milk of animals fed on carrot and turnip tops and often from the first spring pasture is changed in an unaccountable manner, and has frequently caused vomiting and diarrhea in hand-fed children (23). Husemann (137) regards among the meadow plants apart from different species of *Euphorbia* and *Ran-*

unculus, also the *Gratiola officinalis*, *Aethusa Cynapium* or fool's parsley, *Cytisus ramentaceus*, and different varieties of sorrel and mushrooms especially objectionable.

The milk of swill-fed animals has often a peculiar taste and odor, and is said to cause hyperacidity of the urine and consequent eczema. M. Toussaint (24) called attention to the fact that in the district of Argenteuil deaths from gastrointestinal diseases have increased in frequency among bottle-fed children since the establishment of a large distillery, the cows being fed on brewers' grain and other distillery products, and the milk presented an acid reaction. But this acidity is by no means constant, as Uffelmann and Ohlsen (23) have often found it alkaline. Ostertag (25) states that the milk of animals fed with expressed sugar beets is destructive to calves on account of the excess of potassium, and hence objectionable for human consumption. Bolinger reports injurious effects from castor-oil cakes, and Schmidt-Mühlheim attributes diarrheal attacks to the admixture of wild mustard in the rape-seed oil cakes fed to cows. Colah (26) quotes Herkemer as saying that cows having inhaled the putrid emanations of a dead and decomposing cow yielded a milk quite unfit for making cheese, and Mr. Smee, quoted by the same writer, asserts that "the milk of cows fed on sewage farms rapidly putrifies." It is quite true that cows, whenever an opportunity affords, feed greedily upon animal and human ordure, and an impure water supply for cattle has frequently been accused of causing an epidemic of milk-typhoid. While this connection is not proven, it will be readily understood how the udder can become infected while the animal is wading in filth and polluted streams. Dr. J. H. Warren (27*b*) in 1880 called attention to the cow pastures in the vicinity of Boston, where the grass is reeking with sewage filth and sediment washed there by the tide, and that this condition might be the means of conveying disease through the medium of the milk. All of which clearly indicates the necessity for sanitary control of dairies, enforced cleanliness in milking, and the proper care and feeding of the animals.

SECTION 3.

MILK MAY ACQUIRE INJURIOUS PROPERTIES WHILE THE ANIMALS ARE BEING TREATED WITH STRONG MINERAL OR VEGETABLE AGENTS, OR WHICH MAY HAVE BEEN ACCIDENTALLY SWALLOWED.

This is true of the following substances, which have been eliminated in the milk, viz: Arsenic (27), lead (28), iodine (29), copper (27), mercury (30), tartar emetic (31), carbolic acid (32), opium and morphine (33), colchicum (21), and euphorbium (22). Dr. James Law (34) reports an extensive outbreak of ergotism among animals, affecting also calves, presumably through the milk; and Baum (35) refers to salicylic acid, atropia, veratrum, strychnine, croton oil, aloes, senna, and turpentine as likely to affect the milk.

(a) *Arsenic*—There are no cases on record to show that the milk of animals under the influence of arsenic has produced toxic symptoms in man, but the fact that it is eliminated in the milk has been demonstrated by Orfila as early as 1829, also by Roussin, Dungen, Cambessedé, Hertwig, and others. The last-mentioned author found it in the milk within eight hours after administration, and continued to be excreted twenty-one days after the last dose, all of which, as Baum properly insists, suggest the possibility of harm to infants, especially in the vicinity of reduction works, where animals have been known to con-

tract symptoms of chronic arsenical poisoning by feeding on pastures in the vicinity of such smelters. Hertwig and Mulder, according to Husemann, demonstrated the presence of arsenic in the milk of animals, in which it had been employed simply in the form of a wash as an insecticide.

Lead.—While Hertwig and Erdmann (138) were unable to demonstrate the presence of this substance in the milk of an animal who had taken large doses of the acetate, Gerlach (138) reports the poisoning of twelve cows, who had been pastured on ground previously manured with the refuse from lead works, and the mineral was actually demonstrated in the milk of two of the animals. Stempel and Bosscher (28) report the presence of both lead and copper in the milk of four cows, who had accidentally eaten some dry oil paint and died from the effects. Taylor (140) has conclusively shown that the lead contained in the refuse from lead works, when used as a fertilizer, may be taken up by plants and cause symptoms of poisoning in the animals feeding upon them, and Herz (141) has proved that the milk of animals suffering from lead poisoning may prove toxic to the calf.

Iodine.—Peligot, as early as 1835, demonstrated the presence of iodine in the milk, which has been confirmed by Wöhler, Harnier, Labourdette, Dumesnil, and more recently by Stumpf (29) and Luzansky (143), who found it in both human and goat's milk. Indeed, the presence of iodine was demonstrated in the urine of an infant 5 months old, the morning following the administration of 1 gram of potassium iodide the day before to a syphilitic mother.

Copper.—Hertwig (138) failed to demonstrate the presence of this substance in the milk after the exhibition of large doses of the salts of copper. Gerlach (27), however, reports an instance where a goat fed with sour milk from a copper vessel sickened three days after and died. The milk from this animal even the day before her illness caused symptoms of nausea, vomiting, headache, and pains in the limbs, among fifteen or sixteen consumers. Flandin demonstrated copper in some milk without being able to trace it to its source.

Mercury.—Vervier and Heppener have demonstrated mercury in the milk of animals even after the external application of blue ointment. Nothnagel (30) and Klink (146) also found it in human milk while the mothers were treated, respectively, with mercurial suppositories andunctions.

Antimony.—Carsten Harms demonstrated its presence in the milk of a cow who had received the day before 46 grams of tartar emetic. This milk fed to goats and dogs induced violent diarrhea and paralysis of the sphincter ani muscles. Baum in his experiments was unable to verify these results, but it is generally held that antimony passes readily into mothers' milk and should be given with great caution. Lewald in 1857 demonstrated that mercury, zinc, lead, iron, antimony, bismuth, and arsenic are excreted in the milk.

Carbolic acid.—Feser and Siedamgrotzky (147) have shown that it may be eliminated in the milk, and Baum refers to an instance where the milk of twelve cows that remained in a close stable while it was being disinfected with carbolated lime caused vomiting in all the consumers.

Opium and morphine.—There are no cases of poisoning from cows' milk, but the frequent cases of opium poisoning in nursing infants appear to render this possible. Fubini (33), Scherer, Paladino, Hawthorn, and Gorup Besanez (149) have reported cases. The latter cites an instance where the infant fell into a sleep lasting forty-three hours.

after the administration of 20 drops of laudanum to the mother. Herrmann (139) has shown that morphine is found in the milk a few hours after administration and continues to be excreted for several days.

Colchicum.—Marx (142) and Sonnenberger have demonstrated the presence of colchicine in the milk of animals, which had induced symptoms of cholera infantum in children. Ratti (21) reports a number of cases of poisoning produced by drinking the milk of goats that had been feeding upon pastures with meadow saffron, and colchicine was demonstrated not only in the milk, but also in the vomited matter of the patients; the symptoms were those of cholera morbus.

Euphorbium.—Dr. A. E. Mackay (22) reports that on November 27, 1861, ten or eleven ward-room officers of the *Marlborough* were suddenly seized with extreme faintness, nausea, violent bilious vomiting, and diarrhea, and all had taken goat's milk obtained from the Island of Malta. The goats feed greedily upon the *Euphorbia helioscopia* (sun-spurge) and *Euphorbia paralias* (sea-spurge) which impart poisonous properties to the milk, and this fact appears to be generally recognized among the Maltese of all classes.

Cytisus laburnum.—Cornevin (144) has demonstrated the poisonous properties in the milk of animals which feed upon it.

Veratrin.—Apart from a number of older authorities who refer to the fact that the consumption of hellebore by cows affected the milk, Schmidt (145) reports a striking case. A cow was treated for indigestion and received for five days $4\frac{1}{2}$ grams daily of *veratrum album*, on the sixth day the owner concluded to butcher the animal, and the udder, after being sliced and fried, was consumed by the family as a German delicacy. Shortly after the meal the members who had eaten this mess were taken sick with nausea and vomiting.

Salicylic acid.—Stumpf (29) has demonstrated traces of this acid in cows as well as human milk.

Atropin has been demonstrated in the milk by Feser (148) and Siedamgrotzky (147). Cases of poisoning are therefore not among the impossibilities. Belladonna, strychnine, senna, rhubarb, scummony, sulphur, castor oil, ammonia salts, turpentine, copaiba, anise, dill, garlic, wormwood, jalap, croton oil, have all been known to pass into the milk at periods varying from a few hours to a few days after their administration, and continued to be excreted for a few days after the drugs had been withheld.

(b) *Venomous poison in milk*.—Dr. Francis (150) reports a remarkable case of this kind, the details of which were furnished him by Dr. Tayrer, of Eastern Bengal, and for the sake of completeness are herewith presented.

In July, 1868, a fine goat was milked at 7 a. m., the udder and teats were unusually distended and hard to milk. At breakfast a boy 3 years old drank a cupful of this milk, and three-quarters of an hour afterwards the child began to vomit, which continued at frequent intervals. When seen the complexion had become yellowish, with dark rings around the eyes and anxious expression. At 2 p. m. diarrhea supervened and the violent symptoms continued until about 4 p. m. The mother and a friend who had also partaken of the goat's milk were attacked with similar symptoms, while other members of the family, who had used only cow's milk, or no milk at all, remained well. At 10.30 a. m., suspicion having pointed to the goat, examination revealed the mark of a bite, like that from the poison fangs of a snake, on one of the teats close to the extremity. The udder was very much inflamed and the animal was very sick. At noon a frothy foam exuded from her

mouth, and about 2 p. m. she died. Dr. Francis says that this case confirms the evidence of two intelligent and trustworthy natives of Calcutta, tending to show that the milk of an animal bitten by poisonous serpents would convey the venom.

SECTION 4.

MILK ITSELF MAY BE MORBIFIC AS THE PRODUCT OF A DISEASED ANIMAL.

(a) *Inflammatory conditions of the udder and teats (Garget).*—There is an abundance of evidence to show that cows frequently suffer from various degrees of mammitis and other septic processes of this secreting organ. It is obvious that the character and composition of the milk in such instances is changed, and apart from the disgusting admixture of pus, may prove dangerous by the transmission of septic germs, such as the various forms of streptococci and the staphylococci, which have actually been demonstrated in such milk by Krüger (36), Nocard, and Mollerau (37). Kitt, Bang (37b), and others, and we know from Löffler's experiments that milk also offers a suitable culture medium for such germs.

Professor Brown, quoted by Shirley Murphy (38), in speaking of a communicable udder disease of the cow, said:

Whatever the disease really might be, it was at least certain that the milk of cows suffering from it was contaminated with pus and other morbid products which might very well be responsible for human disease, for infantile diarrhea, for instance. The condition of the milk can be judged best from the remark of a dairy boy, who said: "They could not drink the milk themselves and had sent it to London, but they hoped the poor people there would not suffer."

Dr. James Niven (39), health officer of Manchester, describes in the London Lancet, January 19, 1895, page 145, an epidemic affecting 160 consumers of a particular milk-supply with symptoms of diarrhea, sickness, and abdominal pains. The milk had an odor resembling that of sweet pus, and examination revealed the presence of streptococci and a microbe having the characters of the bacillus coli communis. A searching inquiry at the farm resulted in the admission of the farmer that he had sold a cow on November 8 because she was suffering with garget, and that her milk had been mixed with the other supply. A similar milk infection was reported by Dr. Boxall (151) in a recent number of the London Lancet.

As a matter of fact, many of the epidemics of scarlet fever and diphtheria in Great Britain have been attributed to a milk supply from animals suffering with local affections of the teats and udder. Thus, for instance, in November and December, 1885, an epidemic appeared at Marylebone, St. Pancras, and Hampstead (40), which Mr. W. H. Power, the sanitary inspector, traced to a particular milk farm at Hendon, but could discover no sign of scarlet fever at or near the dairy. Upon examination of the cows some of them were suffering from an ulcerative disease of the teats and udders, and from various other circumstances, he inclined to the belief of the bovine origin of this disease.

This opinion was shared by the late Sir George Buchanan (40), and as medical officer of the local government board he requested Dr. Klein to make an examination of the disease observed among the milch cows at Hendon. Dr. Klein found certain micrococci in the diseased tissues and organs of these cows and in the discharge from their teats, and succeeded in growing these in a variety of culture media. Inoculation of calves with this material, whether from cultures or direct from the cow, produced a disease having unmistakable affinities both with the Hendon disease and human scarlatina.

Klein found this microbe to inhabit the tissues and organs both of the human scarlatina patient and of the Hendon cow, and declared that we need no longer hesitate to call it the "*micrococcus scarlatinae*." In 1887, Dr. Thin (41) pointed out that at the time of the Hendon disease other herds were similarly attacked, but no outbreaks of scarlet fever had occurred among the consumers of the milk, but as some of the milkers had pimples and sores on their hands, he believed the Hendon disease to have been cowpox and that the scarlet fever epidemic may have originated in a laundry where some of the Hendon dairy hands lived. Professor Crookshank (42) in 1887 and 1888 opposed Klein's theory, and maintained that the microbe was simply the *streptococcus pyogenes*, and subsequently Professor Brown (43) presented an array of facts also adverse to the conclusions of Klein and Power. One of his strongest points was Professor Axe's statement that scarlet fever had existed in the vicinity of Hendon and hence the possibility of human infection being conveyed to the dairy farm.

In the outbreak at Garnethill, Glasgow, in March, 1888, Dr. Russell (44) found in two cows indications of disease. One of the animals was thin and mangy looking, casting hair and shedding scarf skin; the teats had several sores covered with bloody scabs. Two of these cattle were removed to the veterinary college, where a calf fed on the infectious milk developed severe febrile symptoms, and in recovering it lost hair and showed other indications of desquamation. (See also Professor Davies's (152) excellent article.) While there is no positive proof that there is a disease in the cow which is communicable, as scarlet fever or diphtheria to man, there is nothing strained in the assumption that in these debatable instances and in all the epidemics marked with an asterisk(*), i. e., in 30 out of 100 epidemics of scarlet fever and diphtheria tabulated by us, we are dealing with a *streptococcus* or *staphylococcus* infection, and it will often be impossible to differentiate clinically such attacks from true diphtheria and scarlet fever.

This entire question is by no means settled, but is one that merits the most searching investigation by pathologists and bacteriologists of medical and veterinary schools.

Apart from corroborative evidence found in a large number of these epidemics, Dr. J. Fagan (45) in 1869 reports a case of pseudomembranous stomatitis produced by the milk of a cow with inflamed udder, and Dr. Cotterill's (47 *b*) Epidemics of a Febrile Sore Throat, published in September, 1888, which appeared to be neither scarlet fever nor diphtheria, but were caused by the milk from cows which had an eruptive disease on the teats and udders. In addition to Klein's testimony as to the presence of a *streptococcus* in these cases, Prudden (47) reports 24 cases of diphtheria, in which in all but two he demonstrated a *streptococcus*, probably identical with the *streptococcus pyogenes* and *streptococcus erysipelatos*. Baginsky (Berliner klin. Wochenschrift, 1892, No. 9, p. 183) reports that of 154 cases of diphtheria treated under his supervision, in 118 cases Löffler's bacillus was present, while in the remaining 36 only cocci (*staphylococci* and *streptococci*) could be demonstrated.

When we further consider that toxines may and do produce a scarlatinous exanthem, we feel fully warranted in declaring that in all the epidemics of scarlet fever and diphtheria, which were traced to milk from cows suffering with some inflammatory lesions of the udder or from puerperal fever, we have typical instances of a *streptococcus* and *staphylococcus* infection, and we thus offer for the first time, as far as we know, a rational explanation of a question which has engendered so much heartburnings among English pathologists.

Clinical evidence.—The following additional facts are adduced in support of the foregoing conclusion. Guillebeau (Landw. Jahrb. Schweiz, 1892, p. 27) made an examination of the milk of 76 cows suffering from udder inflammation. In all cases he found the milk contaminated with pyogenic germs, and experiments convinced him that they were pathogenic, in so far as they produced similar inflammation when inoculated in healthy animals. Adametz, Macé and Hueppe observed several kinds of pus-producing germ, under similar conditions, which multiplied to such an extent in the milk that the gases caused the cheese to "heave."

The following case is of special interest, as the history was published long before we knew anything of septic germs.

In 1869 Dr. J. Fagan (45) described a case of pseudomembraneous stomatitis produced by the milk of a cow with inflamed udder.

He was called to see a healthy boy 2 years old on January 12, 1869; lips swollen; aphthous ulcer on the inner aspect of the lips and on the roof of the mouth; the tongue, all but the extreme tip, was covered with a creamy deposit; submaxillary glands slightly swollen, some dribbling from the mouth; pulse accelerated; skin hot, and child suffered from great thirst. On the 13th and 14th there was an exacerbation of all the symptoms, and on the 15th he began to show signs of improvement.

On inquiry Dr. Fagan was informed by the mother that for some time past she had noticed a sediment of a dirty appearance in the bottom of the vessel where the milk was kept, and she began to think that might be the cause.

Microscopic examination of this sediment revealed corpuscles of both pus and blood, and on making further inquiry it was found that the cow had suffered from inflammation of the udder, which had at that time formed an abscess.

Dr. J. M. Cotterill (47 *b*) read a paper before the Medico-Chirurg. Society of Edinburg, giving the history of two epidemics of sore throat occurring at Fettes College. The first began in October, 1886, and comprised 50 cases; the second a year later, and comprised 84 cases.

The symptoms of the disease were as follows:

When first seen the patient (all boys) was generally out of sorts, complaining of headache, want of appetite, and lassitude; occasionally there was sickness or nose bleeding; in most cases a furred tongue, foul breath, and other symptoms of gastric disturbance. The tonsils and posterior wall of the pharynx were bright red, with considerable swelling of the mucous membrane. The uvula and soft palate were also congested, but in no case was there any membranous deposit on these parts. Upon the tonsils and walls of the pharynx, however, there were always follicular exudations, and sometimes a considerable patch of deposit on the tonsils, which were often much swollen and deeply fissured. These patches could always be easily removed. Albuminuria was very infrequent. The disease usually lasted about seven days in its acute stage. A peculiar symptom was the implication of the uppermost of the chain of lymphatic glands behind the sternomastoid. This always happened several days after convalescence had commenced. There would be a large, brawny swelling in the neck, which in every case subsided slowly, without suppuration. * * *

Dr. Cotterill had the drains of the college dairy examined and, as slight defects were found, the disease was thought to be due to this cause. While these defects were being remedied the milk given to the boys was boiled, and four days after this practice began the epidemic stopped suddenly and did not appear again for some three weeks, when, upon the milk being given unboiled, the cases began again. Meantime the cows had been inspected by Professor Williams, and two of them had been certified to be suffering from variola vacciniæ in its later stages.

Dr. MacFadyean is quoted by Klein as saying that the eruption observed by him in these cows differed in every important respect from that of true cowpox.

Dr. Cotterill was not able to convince himself that this sore throat was contagious, for when the milk was boiled affected boys were going about freely among their fellows, but did not seem to disseminate the disease, nor did the disease affect groups of boys who were specially thrown in contact with one another. The chief points presented in his paper are summarized as follows: (1) That this form of sore throat, while presenting certain points of resemblance to follicular pharyngitis and to diphtheria, was absolutely distinct from both and was a form of disease not usually recognized nor described; (2) that it was due to the milk supply; (3) that it was possibly due to some form of vesicular disease in the teat of the cow; (4) that an almost absolute immunity from a second attack was obtained by a first attack.

Dr. E. F. Brush (52b) in 1882 made an experiment on his own cow by bruising a quarter of the udder, thus producing traumatic garget, a condition which he considers very frequently induced in cows on pasture by running against stumps, etc. He found the milk for a number of days stringy, lumpy, and puslike, but always alkaline, while the milk from the three unaffected quarters was decidedly acid. After four days he gave his own child, 16 months old, 4 ounces of this acid but otherwise normal appearing milk at 5 o'clock p. m. The child fell asleep, but in two hours awakened, crying, apparently, with stomach ache, and was kept awake till past midnight, during which time a large quantity of acid was voided per rectum. The next day the bowels were slightly disturbed, and the doctor asks, "What would be the condition of the child had it been fed continuously on such milk?"

Mr. H. O. Hall, the courteous clerk in charge of the reading room of the library of the Surgeon-General's Office, having been personally interested in the study of the milk supply as a member of the Sanitary League, has called our attention to Flemming's work on Animal Plagues from B. C. 1419 to A. D. 1800, and to the epidemics there cited, showing that certain diseases in the lower animals are coexistent with or precede or follow similar epidemics in the human species.

He was also justly impressed with the almost total absence of scarlet fever in countries like Japan (46), where milk is seldom used except as a medicine (48), and after reading Dr. Ashmead's (49) article on the absence of cows' milk from Japan and its beneficial consequences as shown by the absence of rachitism, he looked up the death rate of children under 1 year of age in Japan as compared with Washington, D. C., and found that in the city of Tokio (50) (1,545,726 population) the death rate per 100,000 was 535, while in this city (260,000 population) the death rate per 100,000 of children under 1 year of age for 1892 was: White, 277; colored, 326; total, 603.

We have verified the statistics, and these figures, together with the fact that in Japan milk, being an animal product, falls under the general condemnation, and that the women, in consequence, exercise the function of true motherhood, are submitted as extremely suggestive.

(b) *Gastroenteric diseases.*—It has long been held that the milk of cows suffering from digestive derangements is of an abnormal character, and, according to Siedamgrotzky (147), Fröhner (153), and Braüer (154), it is usually quite watery, of a bitter taste, and generally coagulates within six to eight hours after milking, with the formation of very little acid, so-called "sweet curdling." When we remember that if nursing mothers indulge freely in fresh fruit and green vegetables their milk is apt to

gripe and purge their infants, we can appreciate how cows' milk, under the above circumstances, may produce mischief.

Acute specific enteritis.—Professor Gaffky (51) has reported several cases which he traced to the milk of an animal suffering from this disease and demonstrated a characteristic organism in the animal as well as in his human patients. He also referred to an epidemic of gastro-enteritis reported by Professor Huseman (52) which prevailed in 1888 at Christiana and within three weeks affected over 6,000 persons, but sparing infants at the breast, and concludes, from his own observation and the smaller epidemics which preceded the extensive outbreak together with the fact that the bacteriological examination at Christiana revealed a similar organism, that the germs of "infectious enteritis" may be conveyed in milk. Indeed, it is quite possible that some of the epidemics of typhoid fever with an atypical course and indicated by $\frac{1}{2}$ are infections of this character?

(c) *Fever, especially puerperal and other septic fevers.*—The milk of animals suffering from febrile diseases is unfit for use. This is especially true of the puerperal and other septic fevers, in which Karlinski (53), Escherich (54), Longard (55), and Adametz (56) have demonstrated the presence of the micrococcus pyogenes aureus in milk, the last-named author in a sample which had induced vomiting and diarrhea, and there is reason for believing that the germs of septicaemia neonatorum are in many instances conveyed in the milk since Escherich (57), who examined 13 specimens of milk from mothers suffering from puerperal fever, found the pyogenic germs in 12, and Karlinski (53) not only demonstrated the staphylococci in the milk of the mother, but also in the blood and intestinal contents of the infected infant.

(d) *Foot and mouth disease (eczema epizootica).*—The milk from animals suffering from this disease is unfit for use, and many epidemics of stomatitis aphthosa or aphthous fever have been reported. According to Dr. Salmon, of the Bureau of Animal Industry, this epizootic does not now prevail in the United States, the last cases having occurred in Maine about eleven years ago. There is, of course, danger from a return of the disease at any time, which annually affects about 10 per cent of the cattle in Europe.

According to Baum, our knowledge as to the transmission of the virus through the milk dates back as far as 1764, when Sagar (155) reported instances where the consumption of such a milk had induced throat affections, characterized by increased heat in the mouth and pharynx, followed by the formation of aphthous ulcers. Fagar and Plenk refer to similar observations made in 1765, and Erdt (156) in 1838 reports a large number of cases of "aphthous fever" which were caused by infected milk, the epizootic being especially severe in Germany during that year. Hertwig (157) in 1834, with two other physicians, drank for several days a quart of milk taken fresh from a cow suffering with the disease. At the expiration of forty-eight hours he experienced slight fever, with pain in the limbs and headache, a dry and hot mouth, and an itching sensation in the hands, and especially the fingers. These symptoms lasted about five days, when the mucous membrane of the mouth and tongue became extremely swollen, with the formation of blisters along the edges of the tongue and the inner surface of the lips and cheeks. The blisters were about as large as a millet seed, and filled with cloudy, whitish fluid, and after evacuation of their contents with a needle they filled up again.

In the course of a few days the vesicles ruptured, and after exfoliation of the epithelium presented dark-red and rather slowly healing ulcers, which caused more or less of a burning pain in the mouth, especially in talking, mastication, and deglutition. Simultaneously with the appearance of the blisters in the buccal cavity there was a crop on the hands and fingers in Dr. Hertwig, but not in the other two experimenters. These ulcers required a much longer time to heal than those of the mouth, which got well in the course of ten days.

Haarstick and Guilmet describe similar cases, and Königsfeld's cases would indicate that milk from this source, even if boiled, may prove infectious.

In addition to numerous epidemics, we have evidence to show that the virus may be conveyed in butter Schneider (57) and Fröhner (158), and Herberger (159) reports an instance where sour milk (cottage cheese) was the source of infection. The subject of aphthous fever has lately engrossed the attention of the Berlin Medical Society (58), on account of its extensive prevalence in the suburbs and its spread to the city.

Dr. Siegel, who has made a special study and isolated a bacillus which he considers the essential cause, believes the period of incubation to be from eight to ten days. The patients are then seized with shivering, giddiness, and inclination to vomit. Many of the patients become hoarse, the skin assumes a yellowish-gray color, and as a rule there is obstinate constipation. After this stage, lasting from three to eight days, there is usually swelling of the tongue and gums, sometimes alarming; also loosening of the teeth, intense fetor of the breath, and little blisters appear on the tongue, lips, and the skin of the legs. The blisters in the mouth soon break and form small ulcers; those on the legs are often so close set that they resemble the eruption of measles, sometimes pemphigus, and may even form large ulcers. At times there is hemorrhage from the gums, tongue, and stomach. Dr. Siegel had 6 deaths in 400 cases, and while he believes the disease is transmitted in the milk, he has not found his bacillus in it.

Mr. E. Hart (59) described an epidemic at Aberdeen, affecting about three hundred persons with rigors, fever, tonsillar enlargement, and swollen cervical glands. The boys at the reformatory school, whence the milk came, receiving only skimmed milk, entirely escaped. The water supply of the dairy was bad, but no explanation of the epidemic was given. The symptoms resembled the outbreak at Dover (60) in 1884, affecting in one week 205 cases, all supplied with milk from one dairy, the cows at one of the farms suffering from foot-and-mouth disease. Baum (61) refers to a number of instances where the infection was conveyed in the milk.

(e) *Cowpox*.—The milk of animals suffering with this disease is believed to have caused two epidemics of a peculiar type of sore throat in a boys' college at Edinburgh in 1886 and 1887. The details of these have been presented on page 311. (See Dr. Cotterill's notes.) While Drs. Williams and Woodhead (62) may have erred, as is claimed in the diagnosis of cowpox, there is no good reason why the milk from such animals should not prove infectious.

(f) *Anthrax*.—The milk of animals infected with anthrax is unfit for use, because Feser (63), Manotzkoff (64), Nocard (65), and others have actually demonstrated the bacillus anthracis in the milk, and if infection has not more frequently taken place, it is because the secretion is arrested in the very first stage of the disease. Heusinger (66), however, refers to an instance which occurred in the daughter of a plan-

tation owner, in 1795, at Barbados, who drank one morning most of the milk from a cow suffering with anthrax. Four days afterwards the child presented symptoms of the disease. A carbuncle also appeared on the left arm. Of course the direct transmission through the milk, although probable, has not been proven; still there can be no question as to the objectionable character of the milk. Anthrax is believed by Dr. Sternberg and the officers of the Bureau of Animal Industry not to exist in the United States, or, if it does, to be extremely rare.

The disease may reappear, however, and Dr. Bard (67) refers to the ravages of the bacillus anthracis in California, and quite recently the disease is reported as prevailing in epidemic form among some dairy herds in New Jersey and near St. Louis. Heusinger mentions a number of instances reported by Renault and Mousis, where the consumption of milk from animals with anthrax failed to produce the disease, but there are infinitely more cases on record tending to show the infectious character of the milk (Lappe, Gohier, Desplas), and sad experience had evidently prompted the enactment of stringent laws against the sale of such milk.

Ramazini (160), quoted by Heusinger, informs us that during the anthrax epizootic at Venice in 1599, the sale of meat, milk, butter, and fresh cheese was prohibited by a death penalty. During a similar epidemic in Hanover, in 1732, the milk was described in a sanitary order as yellow-red, or at least streaked that way, and ordered to be thrown away. A similar rule was enforced at Frankfort in 1776 under the penalty of corporal punishment, and one of the Prussian health edicts published in 1819 prohibits the sale of such milk, and refers to a case of anthrax in the person of a woman at Spandau, who died from the effects of infected milk.

(g) *Pleuropneumonia*.—It is claimed that the milk of animals suffering from this disease may convey the germs, and Lécuyer (68), Schüppel (69), Jürgensen (70), and others have actually reported a number of transmissions, but the question is by no means settled. Fortunately, the disease has been stamped out in the United States; at least Dr. Salmon informs us that there has not been a case reported within the last three years.

Dr. G. W. Wigner (70b) reports an outbreak of fever which had occurred in 1878, and was supposed to be due to the milk; the sample received for examination March 19 had a decided tinge of blood visible even through the tinted glass of the common medicine bottle in which it was contained. The microscopic examination revealed a large number of pus corpuscles, pieces of epithelial matter, and other animal debris tinged with blood disks. The chemical examination revealed nothing abnormal. On the 22d of March a veterinary surgeon saw the suspected cow, which he said was suffering from pleuropneumonia, and it was consequently killed, but as there was no post-mortem examination, it is not possible to say whether there was any disease of the udder or not.

Wiedemann, quoted by Würzburg (161), reports the case of two infants who perished from pneumonia, which he attributed to the infectious character of the milk, but as the disease prevailed extensively, and it was shown that the same milk was consumed by another child without causing disease, the evidence seems quite incomplete; nevertheless both Schüppel and Jürgensen, who saw these children, were disposed to regard them as instances of transmission through the milk supply. Lécuyer reports two fatal cases in children, and since Nolen and Poels had demonstrated in cases of pleuropneumonia in cattle an organism

similar to Friedländers pneumococcus, he felt justified in assuming such a transmission.

Raudon (162) also reports two fatal cases, and concludes, because another child in the same family who stoutly refused to drink the questionable milk and remained well, that infection had been conveyed in the milk.

We confess that none of these cases amount to proof, and at best simply indicate the exclusion of the milk from animals suffering from pleuropneumonia from the market.

(h) *Rabies and tetanus*.—There has always been considerable diversity of opinion as to the infectious qualities of milk from animals suffering from rabies. In olden times the consumption of such milk was regarded as dangerous, and Faber (71) refers to a few instances of transmission of the disease in human milk, which all date back to the last century. Feeding experiments have proved in the majority of instances negative, and Hertwig (163), Bollinger (73), Reder (74), Fröhner (153), and others conclude from them that there was no danger from this source.

Since Pasteur pointed out, however, that the mammary glands were among the organs selected for the deposition of the virus, there has been a renewed interest in the subject, and Nocard (72) has experimentally proven that the virus may be conveyed in the milk. Burdach (75) also determined, in the Pasteur Institute, that the milk of a woman bitten by a rabid wolf proved infectious to rabbits and guinea pigs, but was quite harmless to the child. This question remains unsettled, as the accidental admixture of virus outside of the body in the Pasteur Institute is not excluded, but all authors agree that cows may suffer from hydrophobia, and that the milk should not be used. It is not improbable that the milk of animals suffering from tetanus contains some of the specific bacterial products, but it seems almost inconceivable that animals suffering from these affections should be milked at all.

(i) *Tuberculosis*.—When it is remembered that one-seventh of all the deaths are due to tuberculosis, and that the identity of bovine and human tuberculosis has been settled beyond question, we need not wonder that much attention has been given to the study of milk from tuberculous cows.

Ostertag gives the percentage of tubercular animals in 1885 at the abattoir at Leipsic, 15 per cent; at Stolp, 20.7 per cent; Bromberg, 26.2 per cent; while that for the Berlin abattoirs is much higher; indeed 53.7 per cent of the old fattened milch cows presented tubercular lesions of the bronchial and mediastinal glands. According to Rieck (78), of 67,077 cattle slaughtered at Leipsic during the years 1888–1891, 20.4 per cent were found to be tubercular and about 3.6 per cent of the tubercular animals in Saxony present lesions of the udder.

Dr. H. C. Ernst (77) presents evidence from 39 veterinarians, representing 17 States, most of them reporting for one year only, which indicates that there were 549 cases of tuberculosis and 242 suspicious cases, a total of 791 among 165 herds representing about 3,000 animals, i. e., 18 per cent of positively tubercular animals and over 8 per cent of suspicious cases, a total of about 26 per cent; and, according to De Schweinitz (79), in many cases from 50 to 70 per cent of the dairy herds were found to be infected, and in one of these the veterinarian had reported that fully 50 per cent of the diseased animals had tuberculosis of the udder. The English and Danish statistics also show an alarming prevalence among the dairy herds.

* While it is of course possible for milk to be contaminated with the sputum or tubercular matter of consumptives, we are considering here the transmission of the germs from the animal to man through the medium of milk.

The possibility of the presence of tubercle bacilli in the milk of animals was pointed out first by Virchow and by Koch (80) as early as 1882, and subsequently the bacilli have been demonstrated by Bang (81), John (82), Bollinger (83), Ernst (84), Woodhead and MacFadyean (85), and many others (86) in the milk of animals in which the udder was also the seat of the lesion, and for some time it was doubted whether the milk from a cow is virulent unless the udder is the seat of tuberculous deposits. In the report of the royal commission on tuberculosis presented to Parliament April 23, 1895, Dr. Martin (87),* from his experiments, finds that milk was infective only when the udder was itself the seat of tuberculous disease, and this is also the conclusion reached by Nocard (89).

Dr. Woodhead, in the same report, however, calls attention to the rapidity with which the udder disease may spread and considers the very absence of any definite sign in the earlier stage as one of the greatest changes of this condition. Both Drs. Martin and Woodhead insist that no tuberculous animal of any kind should be allowed to remain in a dairy, and recommend as a preventive measure the simple expedient of putting every suspected milk over the fire and taking it off when it boils.

The experience of the royal commissioners is quite different in some respects from that of Ernst (84), whose preliminary work in 1889 led him to declare emphatically that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease, and that the virus is present, whether there is disease of the udder or not. In 1893 Theobald Smith (90), from a number of experimental observations, finds that tubercle bacilli may be present in the milk of tuberculous cows when the udder, so far as the naked eye could tell, contained no foci of disease, and the results presented by Ernst (77) in his recent and final report† on the infectiousness of milk appear fully to

* Dr. Martin's experiments on this point were briefly as follows:

(a) Eight tuberculous cows with healthy udders; no tubercle bacilli found in the milk of any of them; 41 test animals fed and 28 inoculated with the milk remained free from the disease.

(b) Two tuberculous cows with udder disease found after death not to be tuberculous; no tubercle bacilli in the milk; 3 test animals fed and 4 inoculated with the milk remained free from tuberculosis.

(c) Five tuberculous cows with udder disease found after death to be of tuberculous nature; tubercle bacilli found in the milk of 3; 15 test animals fed with the milk and 13 inoculated with the milk of these 3 cows all acquired tuberculous disease. Of the other 2 cows the milk from 1 produced tuberculosis in 4 out of 10 test animals fed on it, and when inoculated into 6 other animals produced tuberculosis in all. The milk of the fifth cow did not produce tuberculosis in 2 animals to which it was given as food, but did produce it in 2 others into which it was inoculated.

(d) In 2 cows with udder disease, in which the veterinary diagnosis of tuberculosis was made, but which were found after death not to have tuberculous disease, no tubercle bacilli were found in the milk, and no resulting tuberculosis was observed in 17 animals inoculated with the milk.

† There were 121 examinations of milk and cream made, the specimens coming from 36 animals affected with tuberculosis, but so far as the best veterinary examination could determine, with no disease of the udder. The bacilli of tuberculosis were found, in 19 examinations, in the milk and cream of 12 different animals, or one-third (33 per cent) of the animals examined. The existence of tuberculosis and absence of udder lesions was proven in all possible cases by post-mortem examinations, which were made upon 20 out of the 36 animals (p. 11).

Eighty-eight guinea pigs were inoculated with milk from 15 different cows and tuberculosis developed in 12 guinea pigs—6 of the 15 cows communicated the disease (p. 16).

Feeding experiments with milk from tuberculous cows and healthy udders were made upon 48 rabbits, 12 pigs, and 25 calves. About 4 per cent of the rabbits, nearly 50 per cent of the pigs, and over 33 per cent of the calves became infected. His investigations appear to negative active transmission of tuberculosis from the cow

justify his former conclusions; which are moreover supported by the investigations of Bang (81), May (86), Stein (91), and Hirschberger (88), the latter being also the first to point out that the inoculation experiments are the more certain guide as to whether the milk is infectious or not, as he obtained positive results from milk of undoubted tuberculous animals, in which he was unable to demonstrate the presence of tubercle bacilli. Indeed, evidence has been furnished by Galtier (92) that the infectious properties may also be conveyed in the butter, cheese, and other milk products of tuberculous cows.

The general results of inoculation experiments would seem to indicate that milk may prove infectious in 60 to 70 per cent of the cases; that the infectious qualities are greatest with milk from animals with udder lesions, and next, from those affected with general tuberculosis. The feeding experiments of Bang (81), Bollinger (93), Lucas and Morro (94), Utz (95), Johne (82), Klebs (96), Kruckow (97), Ernst (84), Baumgarten (98), Fischer (99), and Wesener (100) with tuberculous milk proved infectious in about 45 to 50 per cent of the cases.

When we recall the fact that the last three observers in their feeding experiments were especially impressed with the resulting tuberculous lesions of the intestinal mucosa, mesenteric glands, and liver; when we next consider the large mortality of children under 5 years from primary tubercular ulceration of the intestines, Cohnheim (101) and Aufrecht (102), tubercular peritonitis and tabes mesenterica, and the fact that the food of these children consists largely of unboiled milk, the chain of evidence seems well-nigh complete, but has been materially strengthened by a number of clinical cases, of which we furnish the following abstracts:

CLINICAL EVIDENCE UPON THE TRANSMISSION OF BOVINE TUBERCULOSIS.

Professor Klencke (103), in an excellent little work published at Leipzig in 1846, accuses cows' milk as a frequent cause of disease in children, and deeply regrets that this indispensable article of food, for which no suitable substitute can be found, should at times contain a virulent poison, not easily demonstrated except by its effects stamped upon the countenance of numerous cachectic children, and maintains that there is a positive connection between the milk of scrofulous and tuberculous cows and the frequent development of scrofula in bottle-fed children. He calls attention to the fact that stall-fed, and especially swill-fed, cows are peculiarly prone to become tuberculous (a similar explanation may be applicable to the frightful prevalence of tuberculosis among the North American Indians), and describes the condition of seven cows which he closely studied, five of which furnished an abnormal milk, and the diagnosis of a "scrofulous-tuberculous condition" was confirmed post-mortem in four of the cows (B, D, E, and F).

Klencke gives the clinical history of 16 children who had been fed with milk from these cows, and all point to tuberculosis of either the

to its offspring, as of 19 calves killed within six days after birth no evidence of the disease could be found.

An interesting investigation was also made of the general milk supply of Boston. Of 33 samples from the mixed supply obtained from the inspector of milk, in 56 examinations the tubercle bacilli were found once, and among 25 rabbits inoculated with milk from a mixed source, the disease was transmitted in 3, showing the danger in any milk supply from uninspected cattle.

This last experiment is in accord with the experience of Dr. Friis (76), who inoculated 28 rabbits with milk found in the market of Copenhagen and transmitted the disease in 6.

intestines, glands, skin, or bone. In three of the intestinal disorders he refers to the presence of indurated mesenteric glands. Of the 16 cases one died, but at the time of his report two of the children were still suffering with "intestinal blennorrhœa and scrofulous abdominal glands," and he feared that, in spite of the change of milk, these patients would perish. In the fatal case, that died from an abscess of the left breast, the autopsy revealed "a true infiltration of tubercular matter beneath the skin, which had probably acted as a foreign body and excited an exhausting suppurative process."

Unfortunately, nothing is said about the pathological conditions found elsewhere, but it must be remembered that Klencke was only endeavoring to prove the transmission of scrofula. In this connection we can hardly resist the conclusion that the difference in degree of virulence observed in the various tubercular manifestations is perhaps not always attributable to the condition of the host, but may possibly be due to an attenuated character of the tubercle bacilli. Whether or not the German habit of boiling the milk, or adding boiling water, or the action of the gastric juice modifies the virulence of the bacilli, as shown by the slower forms of tuberculosis, remains to be seen; but in the feeding experiments with raw and boiled milk, of Bollinger (93) in 1878, and Bang (81) in 1890, we notice a marked difference in the resulting lesions. We have not seen the full report of the royal commission on tuberculosis, but from the abstract published in the *British Medical Journal*, page 948, April 27, 1895, it would appear that Dr. Woodhead noted the effects of temperatures insufficient for its actual destruction upon the virulence of tuberculous material.

By the operation of certain low temperatures he obtained a diminution in the virulence of the tuberculous material in the milk, which then became "so tardy in its operation on test animals as to simulate the slower forms of consumption seen in the human subject, or when used to feed pigs—animals having some specialities of throat structure like that of man—gave rise to chronic enlargements of the throat glands, resembling the scrofulous glands so common in children. These observations are of much interest to us, not least because they suggest the possibility of widely prevalent forms of human tuberculosis owning an origin in milk."

CLINICAL HISTORIES OF PROFESSOR KLENCKE'S CASES OF BOTTLE-FED CHILDREN WITH MILK FROM DISEASED COWS, WITH CLINICAL AND POST-MORTEM DATA OF THESE ANIMALS.

1. Carl P., a vigorous infant of healthy parentage, was nursed by his mother until 10 months of age, when he was partially placed on diluted cow's milk; up to this time he was in splendid condition and all his bodily functions perfectly normal. After six weeks of this mixed-milk diet he was confined exclusively to milk from Cow B, properly diluted; very soon after this the child began to fail; the eyes looked languid, face pale, alternating with hectic flushes, followed by a muddy complexion, and sunken eyes. The bowels were irregular, sometimes constipated, and frequently quite loose. At the end of two months there was decided emaciation, capricious appetite, nasal catarrh, and progressive weakness. Treatment for two months proved unavailing, when the family physician recommended a change of milk, after which the child slowly but surely progressed toward ultimate recovery.

2. Louise L., daughter of perfectly healthy parents, whose other children, aged respectively 5 and 3 years, enjoyed perfect health, was

seen by Professor Klencke when 5 months old, and presented at this time the very picture of health. He saw the child again when 11 months old, largely because he knew the child had been fed during the past six months with milk from Cow B, and found the parents greatly distressed over the condition of their child, which presented evidence of external glandular enlargement, acidity of the stomach, diarrhea, emaciation, tympanitic abdomen, and upon deep pressure he found the mesenteric glands to be indurated. There gradually appearing symptoms of "atrophia meseraica" (tabes mesenterica, or consumption of the bowels) had induced the parents to seek medical aid. The child was treated by a colleague with malted and gelatin baths, oil inunctions over the abdomen, with occasional doses of calamus, rhubarb, and aqua magnesia, bicarbon, fresh air, and exposure to sunshine. Professor Klencke, knowing the dangerous qualities of the milk from Cow B, communicated his experience to the attending physician and insisted upon the selection of a milk from a healthy cow, pasture and hay fed, with the result that in the course of six months the digestive disturbance of the child had been materially improved, and there was also a decided reduction in the size of the enlarged glands.

3. Minna H., of healthy parentage, had received her milk partially from her mother and partly from Cow B, since her sixth month, and lived exclusively on this cow's milk in gradually increased proportions from her eleventh month. The milk had been taken in various forms, but mostly in a raw state, with the addition of fennel tea. At the age of 18 months the parents noticed a progressive curvature of the lower limbs. The child was irritable, peevish, and listless; tongue heavily coated, with constipation and alternately diarrhea; the face emaciated and wrinkled; urine cloudy and devoid of free phosphoric acid; the knee, ankle, and elbow joints were swollen; and, in addition to the symptoms of osteomalacia (Rickets), there was more or less febrile disturbance. The family physician had suggested a "milk cure in the country," and the mother, in order to get the milk as fresh as possible, took the child to the very farm whence the milk from Cow B was obtained. It is needless to say that there was an aggravation of all the symptoms, in spite of the employment of malted baths, alcoholic frictions, and cod-liver oil. Professor Klencke suggested the danger of the milk to the attending physician, which was promptly changed, with the result of gradual improvement of all the symptoms and complete restoration of health at the end of eighteen months.

4. Ch. L. lost his mother six weeks after his birth, and was intrusted to a wet nurse who left him on account of homesickness when only 5 months old; he was then placed on diluted cows' milk and prospered nicely from the fifth to the ninth month while taking milk from a healthy cow on good pasture. A change of residence in the fall brought about a change of milk, and unfortunately the supply came from Cow B. Early in the spring the child began to fail, with loss of appetite, emaciation, pallor, and an old and careworn expression about his face; enlargement of the glands about the neck, scrofulous inflammation of the eyes, with more or less fever, followed later by the development of rickets or softening of the bones. The treatment of the family physician proved wholly unsuccessful, until the child was sent to a country home and placed on milk from good-pastured cows. At the expiration of two years there was complete recovery from his acquired scrofula.

5, 6. F. K. and A. K., twin boys, with excellent family history, had been nursed by their mother until the ninth month, with occasional

addition of milk from Cow D. From this time on their milk was exclusively derived from this particular cow. Two other children in the family, respectively 7 and 4 years of age, presented the picture of health, having been raised under precisely the same environments, but upon a different milk supply. Six months after the use of the milk from Cow D the boys presented evidence of a nasal catarrh; one of them also had an eruption of the scalp and a slight attack of conjunctivitis which aroused Professor Klencke's suspicion of scrofula, and he found, moreover, evidence of general softening of the bones, with a pronounced curvature of the lower extremities. The family history being good, but the treatment proving ineffectual, he directed his attention to the milk supply, which was found to be abnormal and derived from a diseased animal; the milk was stopped and a new supply from a perfectly healthy cow, together with antiscrofulous remedies at the expiration of one year found the babies in a fair way toward complete recovery.

In his examination of Cow D and his inquiries as to the number of infants receiving their milk supply from this source, his attention was directed to another infant, and, with a truly scientific spirit, he sought, through their physician, an introduction into the family and found—

7. H. L., a female infant, aged 11 months, whose milk supply had been from Cow D during the past three to four months; the child was quite pale, weak, and anæmic, and suffered from frequent attacks of diarrhea and vomiting; the eyelids were reddened, slightly congested, and swollen, while the family history and condition of the parents was perfectly satisfactory. He promptly communicated his experience and advised a change of milk, which together with appropriate medication resulted in complete recovery at the expiration of nine months.

8-19. Four children, of four different families, free from a tainted family history, surrounded by favorable environments, were common consumers of milk from Cow E, and all four developed pronounced symptoms of a scrofulous condition. Two of the children suffered from exhaustion, anæmia, irregular functions of the bowels, with subsequent progressive emaciation and hectic fever. The other two children, without presenting an external sign of a scrofulous habit, suffered from intestinal blennorrhæa (mucus diarrhea) and symptoms of "abdominal scrofula." In the course of their second year the milk of these four children was changed, and the two last mentioned gradually recovered, while the first two, on account of the deep-rooted cachectic condition, will probably perish.

12, 13. An infant boy and girl of healthy parentage had been fed for thirteen months with milk from Cow F. The little boy at the beginning of his second year suffered from a scrofulous abscess, necessitating medical treatment, and a lymphatic swelling of the left hip seriously threatened his life. About this time the dangerous character of this milk had been determined, and after changing the supply to a healthy source the favorable effects of antiscrofulous treatment became soon apparent.

The little girl had developed a catarrhal affection which soon assumed a scrofulous character, and the scrofulous dyscrasia (habit) became all the more pronounced after an attack of measles. At this time the family physician was informed of the condition of this particular cow and the probable danger from the milk, and after a change of the milk the remedial effects of treatment were soon apparent.

14-16. Three children, consumers of milk from Cow G, for seven, ten, and sixteen months, all developed symptoms of scrofula; one of them,

a little boy, developed in the last quarter of his second year an abscess of the left breast, from the effects of which he died. The autopsy revealed "a true infiltration of tubercular matter beneath the skin, which probably acted as a foreign body producing a pathological irritation and suppuration, and on account of its continuance finally exhausted his life."

It will be seen from the foregoing clinical data that four of the children had been fed with milk from Cow B; three received their supply from Cow D, four from Cow E, two from Cow F, and three from Cow G. Professor Klencke having connected these cases with a particular milk supply, he at once extended his investigation into an examination of the cows, the method of feeding, their general sanitary surroundings, together with a microscopic and chemical examination of the milk, and actually followed up his inquiry by four autopsies of the cows.

Such a course is worthy of emulation in this scientific epoch. When we remember how much care is usually taken in the selection of a wet nurse, the remarkable indifference displayed in the matter of cows' milk is really surprising, and appears to be due to ignorance and the evident presumption as "a cow is a cow" we need know nothing more. While it is absolutely impracticable for physicians in cities and large towns to pursue this same line of inquiry, it is equally evident that the consumers of milk need protection, which should be furnished by proper sanitary control of the dairies on the part of the State and municipal authorities. Now, let us see what Klencke found in the physical condition of these cows, their milk, and subsequent autopsies:

1. Cow B, heifer, with her first calf; small and delicate muscles; abdomen tense, enlarged, and tympanitic; has had several attacks of convulsions; the nasal mucous membrane was injected, dry, and hot; the eyes and buccal membrane were also injected and there was an increased flow of saliva; the udder was small, with prominent blood vessels.

The milk of this animal was examined in August while being fed on pasture, beet tops and vegetable garbage, and appeared somewhat watery, with a rather faint animal smell and absence of the characteristic sweetish taste, microscopic examination revealed globules $\frac{2}{800}$ to $\frac{1}{800}$ inch in diameter and having a tendency to adhere together in pairs and triplets. Sp. gr., 1.027; water, 83.7; solid matter, 14.3; composed of fats, 5.2; casein, 6; extractive matter, 3.1, and very little lactic sugar.

The milk was examined in September, while the animal was being fed on distillery and brewery slops, with potatoes and fresh hay, and presented a bluish watery color, reaction slightly acid, probably due to free lactic acid. The result of the chemical analysis was quite remarkable, as shown by the presence of albumin as follows: Water, 87.02; solids, 12.98; composed of casein, 5; albumin, 2; butter, 4.91; extractive matter, 1.7, and very little lactic sugar.

The milk was again examined in February, while the animal was being fed exclusively on distillery and brewery slops, with potato refuse, and presented a bluish watery color, thin consistency, slightly alkaline reaction, sp. gr. 1.070, only 3.4 per cent of cream, and very little milk sugar. The globules, already referred to, were quite sparse and small, opaque, not always spherical, but looked biscuit-shaped and as if they had been acted upon by diluted acetic acid, while the former globules had been seen in groups. The yield also revealed small bodies of a whitish color, lighter around the edges, occasionally granular, which under the influence of acetic acid became more transparent, began to swell, and then disappeared. These bodies were insoluble in alcohol and ether, and

other tests revealed their albuminoid character. The chemical analysis revealed water, 87; solids, 13; composed of casein, 3; albumin, 4; butter, 3.2; extractive matter, 2.8. The appearance of albumin in the milk of swill-fed animals is regarded by Professor Klencke as an important matter and strongly suspicious, as it was observed by him only, under such unfavorable feeding conditions.

This cow proved so unprofitable to the owner that, like many animals of this class, it found its way to the butcher's shop, where the professor found evidence of fully developed scrofula, not only of the subcutaneous glands of the neck and abdomen, but also of the mesenteric glands, which were found to be enlarged and indurated. The intestinal mucous membrane was strongly injected with circular vascular spots, in several of which could be seen yellow nodules about the size of a millet seed; the contents of the intestines, pancreas, and mucous glands of the diaphragm yielded an acid reaction, with the presence of free lactic and acetic acid.

Cows D and E belonged to the same owner, were inmates of the same stable, and shared about the same food and environments; both had a tympanitic abdomen, bowels irregular, with a tendency to mucous diarrhea; their appetites were poor for days in succession, and Cow E frequently refused food and was fond of rest; the udder of both animals was large, pendulous, and presented to the touch nodular indurations; the edges of the lacteal openings in the teats were red and swollen; the nasal mucous membrane was reddened and covered with a purulent discharge, the eyes were bloodshot, and the vaginal mucous membrane secreted much mucus.

The milk of Cow D was examined after her fifth calving in February (the animal having been fed during the whole winter without exercise on slops of a distillery) and presented a bluish, watery color, a faint animal odor, sp. gr., 1.080. The microscope revealed a few small milk globules mixed with distinct fat globules. Elain (?) also granulated, cells resembling pus corpuscles, and some amorphous deposit of a brownish-yellow color; after exposure to the air the milk globules assumed more of an oval form; the addition of a little acetic acid rendered the granular bodies transparent, and the presence of nuclei revealed their true character as pus corpuscles, and the amorphous matter was found to be composed of mucus; the addition of nitric acid showed the presence of albumin. The milk contained only 12.9 parts of solid matter, composed of casein, 3; albumin, 5; butter, 2.2; elain, 1.2; extractive matter, 1.5. The milk from this animal was again examined the following morning, immediately after milking, with the same results, except that the reaction was slightly acid.

The autopsy of Cow D—

Revealed a typical case of scrofula of the mucous membranes; those of the nose, intestines, and urinary passages were inflamed, and those of the uterus, vagina, and lacteal ducts revealed blood stasis and motley colored spots; the small intestines presented numerous small ulcers, and the frequent attacks of diarrhea were doubtless caused by a serofulous-intestinal catarrh. A number of the mesenteric glands were enlarged and inflamed, especially in the direction corresponding to the intestinal ulcers; groups of congested blood vessels were found all along the peritoneum. * * *

The lungs and spleen revealed typical tubercular deposits. * * *

The milk from Cow E was examined in February, after her second calving, under the conditions of feed, etc., already indicated, and presented a bluish, watery color, a faint animal odor, a slimy sleek consistency, and a sp. gr. of 1.063. Microscopical examination revealed a few small milk globules of apparently normal character, there were, however, a number of disk-like, kidney-shaped bodies, somewhat larger

than the milk globules, less transparent, more yellowish, and bearing a strong resemblance to colostrum bodies; there were also fragments of epithelial cells and granular bodies, such as are found on congested mucous membranes, and scarcely distinguishable from pus corpuscles. Caustic ammonia rendered the milk slimy and even stringy, which, according to Donné, is an argument in favor of the presence of colostrum. The chemical analysis revealed casein, 7.01; albumin, 10.06; butter, 2.60; water, 80.34. Not a trace of lactic sugar or incombustible salts.

The autopsy of Cow E revealed a general scrofulous condition. Apart from the fact that everywhere the mucous and serous membranes presented vascular injections, there were extensive deposits of miliary tubercles in the lower part of the small intestines, which engirdled the lumen in the form of white miliary bodies, embedded in and slightly projecting above the surface of the mucous membrane, and which in many instances had been destroyed by ulceration, an appearance altogether not unlike that found in human subjects who have died from *ileitis pustulosa*. All of the mesenteric glands were found to be enlarged, indurated, injected with blood vessels, and infiltrated with a cheesy substance. The nasal mucous membrane showed numerous ulcerations and was covered with a purulent discharge. The lacteal ducts appeared inflamed, and the udder was the seat of an induration and infiltration with a cheesy mass of precisely the same character as the tubercular matter found in the lungs and liver as raw tubercles; crystals of cholesterolin were invariably present in and about these infiltrations and the pleural cavity was filled with what is called, in popular language, "bad water."

Cow F, when examined, was about 7 years old, and was found to be rather emaciated, and a pot-bellied animal, with numerous nodules beneath the skin; the udder was flabby and pendulous, and the cow suffered from frequent attacks of tympanitis and constipation; the eyes looked bloodshot, with vascular stasis also of the mucous membrane of the nose and vagina; there was evidence of chronic nasal catarrh, and microscopical examination of the discharge revealed the presence of pus corpuscles and ferment bodies. The animal was a greedy feeder, but yielded only a small amount of milk, which was examined on two occasions, once in September, twelve weeks after her sixth calving and while being fed with distillery slops and greens. The results of the analysis were precisely the same as found in that from Cow D. The second examination, made in February, thirty-three weeks after calving, while the animal was being fed exclusively on distillery slops, revealed a faintly acid reaction, and a sp. gr. of 1.064, with very little cream. The milk globules were large but few, and partially adherent to each other; free-oil globules (elain), numerous collostral bodies, and mucus (pus) corpuscles were found to be floating in the serum. The addition of caustic ammonia rendered the milk slimy, and the addition of nitric acid in another sample revealed the presence of albumin. Chemical analysis failed to detect milk sugar, and but very little ashes, the result being, casein, 4; albumin, 14; butter, 1.55; elain, 1; water, 80.45.

The autopsy of this animal was conducted by Professor Klencke at the Royal Veterinary School, for the purpose of a minute anatomico-pathological study, which demonstrated the fact that the same scrofulous lesions may develop in the cow as are found in the human subject, and that human scrofula and the disease found in the mammalia are identical. All the mesenteric glands of this animal were found to be

enlarged, chronically inflamed, and infiltrated. The intestinal mucous membrane revealed the presence of miliary tubercles arranged in circular groups; the nasal and respiratory mucosa were reddened, and the lungs the seat of tubercular infiltration, the mass consisting of casein, albumin, soda, and lime salts, and at several points it had been transformed into a greenish, thin pus. The pancreas was partially infiltrated with a tough, cheesy mass, which traversed it in a cordlike and uneven manner. The liver revealed similar deposits, and the spleen, while free from infiltration, was nevertheless abnormally tough in consistency. The blood was deficient in fibrin, blood corpuscles, and salts.

Cow G was about 7 to 8 years old; emaciated, bloated abdomen, through the walls of which indurated glands could be distinctly felt; the udder was enlarged and the mucous membrane presented evidence of vascular stasis; the nasal mucous membrane was covered with a purulent discharge. The animal was a greedy feeder, but otherwise quite languid, and yielded only a small quantity of milk, which was examined on repeated occasions while the animal was stall fed, both summer and winter, with very little green feed, the average result being an acid reaction, except occasionally in the evening; the sp. gr. was from 1,067 to 1,070; in spite of the bluish, watery color of the milk and its slimy consistency, the cream rarely yielded a butter of normal consistency; the latter as a rule was peculiarly soft. Under the microscope the milk globules appeared large, adherent, but few in number, mingled with free fat globules (elain); colostrals bodies with uneven borders, mucus (pus) corpuscles, and fragments of epithelial cells were also present. Acetic acid precipitated mucus, and nitric acid revealed large quantities of albumin. Chemical analysis yielded casein, 3.2; albumin, 15.2; elain, 1.4; butter, 2.2; water, 78.

There are no details of an autopsy of this animal, but the presence of indurated abdominal glands, as referred to in the physical examinations, sufficiently indicates what Professor Klencke would call a pronounced case of scrofula, but what the modern pathologists define as tuberculosis. The milk of these four cows was consumed by a number of children, previously healthy, and developed what was formerly known as scrofula, and now recognized as the slower forms of tuberculosis; and while this was long before the era of microbes, Professor Klencke points out that the milk differed from normal milk in this, that it contained a large amount of albumin and free-oil globules, which he called elain; was quite deficient in butter-fats, the salts and lactic sugar, and contained, moreover, the products of an abnormal mucous membrane, such as "granular (congestion) corpuscles, epithelium and pus corpuscles."

If we stop to inquire into the food and care of these animals, we are told that they were stall and syvill fed and fortified with the results of Boussingault's feeding experiments, which he quotes, he attributes the development of scrofula in the cows directly to malnutrition, consequent upon improper feeding, together with insufficient exercise, damp, dark, and badly ventilated stables—conditions which we regard at the present day as strong predisposing factors to the development of tuberculosis.

Boussingault fed two cows, their combined weight being 1,191 kilograms, for seventeen days with 2,281 kilograms of red beets. The animals yielded during this period 203 liters of milk. The milk from Cow A contained casein, 3.67; milk sugar, 3.39; butter, 4.56; chlorides, 0.43; phosphates of lime and magnesia, 0.22; water, 87.73. The milk from Cow B yielded casein, 3.81; milk sugar, 3.74; butter, 3.47; chlorides,

0.54; phosphates, 0.26; water, 88.23. These animals furnished 8.31 kilograms of butter and lost 1.45 kilograms of fat in the feces, and as beets only contain 0.001 of fat besides 0.0021 of nitrogen and 0.00046 of phosphoric acid, the animals produced 9.76 more fat than they consumed, with a loss in bodily weight of 87 kilograms.

After feeding these cows for four days with hay a second experiment was begun, their combined weight at this time being 1,114 kilograms; and they received within the next fifteen days 472 kilograms of hay and yielded 154 liters of milk, which from Cow A contained casein, 3.63; milk sugar, 3.46; butter, 5.92; chlorides, 0.45; phosphates, 0.27; water, 86.26; while the milk from Cow B contained casein, 3.56; lactic sugar, 3.94; butter, 4.39; chlorides, 0.52; phosphates, 0.20; water, 87.39. Both cows furnished 8.03 kilograms of butter and eliminated with the feces 5.08 kilograms, a total production of 13.11 kilograms of fat within fifteen days. The hay yielded to ether 3.5 per cent of fat (and contained 0.012 nitrogen and 0.0034 phosphoric acid); the ingestion of fat amounted to 16.52 kilograms and the elimination to only 13.11 kilograms, with an actual consumption of 3.41 kilograms of fat, and a gain of 41 kilograms in their combined weight.

After the animals had maintained for several days a combined weight of 1,156 kilograms, they were fed for fourteen days with potatoes, consuming 1,077 kilograms, and yielding 122.6 liters of milk, which from Cow A contained casein, 4.37; lactic sugar, 3.09; butter, 3.97; chlorides, 0.55; phosphates, 0.27; water, 87.75. The milk from Cow B contained casein, 3.99; milk sugar, 3.99; butter, 4.63; chlorides, 0.55; phosphates, 0.27; water, 86.57. The potatoes contained 0.002 of fat, besides 0.0037 of nitrogen and 0.00109 of phosphoric acid; the amount of fat ingested was 2.15 kilograms, the amount contained in the feces was 0.51, the total amount eliminated as butter and fat was 6.16 kilograms, and this plus production resulted in a loss of bodily weight of 33 kilograms.

Dr. Ernst's (77) recent clinical inquiry on the transmission of bovine tuberculosis revealed the following facts: Eighteen hundred circulars were sent to physicians and veterinarians asking if they knew of any cases in which human beings had been infected with tuberculosis through the milk of cows. Among 1,013 replies from physicians 895 were negative, 8 reported cases of infection of a child by the mother, 11 reported cases of infection by cows' milk, and 16 reported suspicious cases. The veterinarians gave much more striking evidence, since among 54 replies 14 reported positive and 9 suspicious cases.

The positive replies quoted by Dr. Ernst are not such as will be considered conclusive evidence by pathologists, and really lack scientific accuracy. While the development of tabes mesenterica, phthisis, tubercular meningitis, glandular affections, etc., occurring in hand-fed babies of perfectly healthy parentage points with suspicion to the milk supply, the investigation should be extended, as Klencke had done fifty years ago, whenever practicable to the animals, and with our present opportunities for bacteriological investigations, some valuable facts may thus be collected.

Johne (82) reports a striking case in which a post-mortem examination of the cow revealed extensive tuberculous deposits. The steward of the farm was especially interested in the result of the investigation, as on account of the previous good condition of the animal the milk had been selected for his infant son. The family physician was at once notified, and reported progressive emaciation and a "pulmonary catarrh" which he had attributed to a recent attack of measles; a short time afterwards Johne received word that the boy, then 2½ years old, had succumbed to

an attack of miliary cerebral tuberculosis. This case is of special interest because there was no hereditary predisposition, and the other children in the family are perfectly healthy.

Hermisdorf (104) relates the case of a girl 14 years of age, of healthy parentage, who developed tubercular laryngitis and tuberculosis of the ileum and cæcum, which he attributed to the milk of a tuberculous cow. This girl was in the habit of drinking the milk while still warm.

Leonhard (105) mentions a family in which the children contracted tuberculosis soon after being weaned. The cow was finally suspected and killed, and the diagnosis confirmed. The next child in the family remained in good health. He also mentions two cases of tubercular meningitis traced to the use of unboiled milk from a tuberculous cow. Demme (106) reports five cases observed in the children's hospital at Berne infected by tuberculous milk. Sonntag (107), Meyerhoff (108), Stang (109), Schöngen (110), and Uffelmann (111), report similar cases. Epstein (112), in his extensive experience, finds that children from consumptive parents rarely develop the disease when provided with a healthy wet nurse, and attributes the frequency of intestinal tuberculosis to the infectious qualities of the milk. Herterich (75) relates two cases, which he attributed to the milk of a tuberculous mother. Brouardel cites a case where five out of fourteen girls living in a boarding house became consumptive subsequently to the use of milk from a tuberculous cow.

On pursuing the literature on this subject, we found Carmichael's (113) "Essay on the nature of scrofula, with evidence of its origin from disorder of the digestive organs," London, 1810, in which he refers to acescent diet, especially of cow's milk, as a frequent cause of scrofula. Page 50, he says:

Infants at the time of weaning are, from the change of diet, particularly subject to bowel complaints, too often followed by disease of the mesenteric and lymphatic glands.

Dr. J. Cheyne on page 51 writes, October 17, 1809:

I have attended some children of scrofulous families, who died of the mesenteric disease with a general glandular affection, as proved by dissection, whose complaints commenced with restless, feverish, thirsty nights; fullness, hardness, and tenderness of the abdomen; loose, unnatural stools, wasting of the flesh, and regular hectic. I have traced these complaints to neglect and mismanagement in diet, and in one or two instances distinctly to the child having been allowed to swill as much milk as it chose. And in other children (two of whom are but just recovered) I have evidently stopped the progress of the disease by the use of the warm or tepid salt-water bath, by purges, calomel in alterative doses, entire disuse of milk, animal decoctions, afterwards port wine, * * * proper clothing and exercise in fine weather. Has not this, the acute stage of the mesenteric disease, been overlooked?

Carmichael quotes Wiseman, White, and Lieutand to show "that whenever the outward glands do appear swelled you may safely conclude the mesenteric be so too, they being usually the first part that is attacked by this malady."

Carmichael, while he never saw a subject in the dissecting room with strumous glands externally without a similar state of those of the mesentery, insists that he has very frequently seen the latter unaccompanied by any affection of the external glands, which to his mind indicates that in scrofula the mesenteric glands are the first affected. While his essay does not attempt to deal with the transmission of scrofula in the milk of diseased cows, he points with emphasis to the use of sour milk, and on page 101 he remarks:

With respect to the disease in question, we know that swine are so subject to one very similar, that scrofula has in consequence derived its name from those animals, and certainly their extraordinary fondness for acescent food corroborates in some

degree the foregoing opinions. Swine, it is well known, fatten upon buttermilk and upon the sour liquid formed in starch manufactories during the steeping of wheat.

Casper (114), in his *Characteristic of French Medicine, etc.*, published in 1822, on page 124, writes:

Scrofula is not more rare in Paris than elsewhere, and baffles also here the efforts of physicians. La Billardière declares that the majority of milch cows in Paris perish from nodular consumption, and that their milk contains seven times more of phosphate of lime than common. Is it possible that there is a connection between this phenomenon and the many tuberculous diseases among the children in Paris? We can not pursue here this investigation, where the mere fact suffices that in Paris, especially in the hospitals for foundlings and for children, like the St. Louis and others, the sequelæ and effects of scrofula can be seen in astonishing numbers.

SECTION 5.

MILK WHICH ACQUIRES INFECTIVE PROPERTIES GENERALLY ONLY AFTER IT LEAVES THE UDDER OF THE ANIMAL.

Numerous instances having been observed in which outbreaks of typhoid fever, scarlet fever, and diphtheria, by their sudden and explosive character, affecting families living in streets or localities supplied by the same milkman, naturally pointed to the milk supply as a common cause, but to Dr. Michael Taylor (115) belongs the honor of being the first to point out definitely that cows' milk might serve as the medium of spreading typhoid fever from a dairy where the disease prevailed. In 1867 Dr. Taylor (116) also showed that scarlatina might be distributed in the same way. In 1877 Mr. Jacob (117) traced a diphtheria epidemic at Sutton to the milk supply, and in 1872 Macnamara (118) traced an epidemic of cholera at Calcutta to an infected dairy.

These facts could not fail to invite criticism and sharpen the power of observation in others, and in consequence similar outbreaks were more frequently reported, so that Mr. Ernest Hart (119), in a most valuable paper, was enabled to present to the International Medical Congress, held in London, 1881, the history of 50 outbreaks of typhoid fever, 15 of scarlet fever, and 7 of diphtheria, all traceable to the milk supply; but even this formidable array of facts was not accepted as conclusive, largely because the milk industry constitutes a strong spoke in the commercial wheel, and naturally opposed what they considered meddling interference with their trade, and in many instances were upheld by members of our profession who considered the evidence wholly circumstantial and incomplete as long as the specific germ of the respective disease had not been demonstrated in the suspected milk. While this link in the chain of evidence would be very desirable, it will be well for those who exact it and completely ignore the reports, many of which are masterpieces of medical logic, to remember that by the time we are able to connect a certain outbreak with a particular dairy, days, and sometimes a week or two, will have elapsed, the germs have been distributed, are probably exhausted, and thus a most opportune time for their detection will have been lost. An approach in this direction worthy of emulation has, however, been made by Professor Vaughan (120) before the Congress of Hygiene and Demography, in London, August, 1891, when he declared:

Milk has been frequently diluted with water containing the germs of typhoid fever, and the prevalence of the disease may mark the daily rounds of the milkman. I have here a culture tube containing a bacillus, which I found simultaneously in the water from the dairy well and in the milk from the cans. At the same time one or more cases of typhoid fever existed in every family which patronized this milkman. The bacillus resembles, but is not identical with, that of Eberth.

It is of course well known that Professor Vaughan believes that different forms of bacteria may induce typhoid fever. But even if the specific germs of the diseases in question should never be demonstrated in suspected milk, we know from the bacteriological studies of Heim (121), Löffler (122), Kitasato (123), Raskina (123), Sonnenberger (124), Riedel (125), Wolfhügel (125), Hesse (123), Fränkel (126), and others, that milk is a favorable culture medium for the germs of typhoid, cholera, erysipelas, pneumonia, and other pyogenic germs; also for the bacillus of tuberculosis, as shown by Heim (121), and which Gasperini (128) even found in butter 120 days old.

Adametz (129) has cultivated the bacillus of diphtheria and of glanders in sterilized milk. This is at least strong corroborative evidence and must be especially gratifying to English authors who have been charged with going altogether too far in their attempts to regulate the sale of milk (135).

Cholera.—Professor Koch (130), in 1884, first pointed out that milk is a suitable culture medium for the cholera bacillus, but the possibility of the virus being transmitted in the milk had been emphasized before. Gaffky (131), in the report of the cholera commission in India, in discussing this subject, refers to the unsanitary conditions of the dairies in India where the water supply is derived from tanks which are promiscuously used for bathing, laundry, and dairy purposes, and as Dr. Payne (132), the health officer of Calcutta, in his report for 1876, expressed it, "milk cows are stalled in the neighborhood, and the nearest water is freely mixed with the milk and distributed through the town." Dr. Cayley (132) refers to the fact and consequent danger that at Katarhatti, a suburb of Calcutta of 300 families, 70 are engaged in the milk business, all located near one of these notorious water tanks, and that in September, 1872, not less than 16 cholera cases with 6 deaths occurred among these dairy people.

Dr. Macnamera (118) reports an outbreak in a boarding house at Calcutta attacking six Europeans and the cook of their department, while the other inmates and servants of the house escaped, they had all consumed the milk from a particular dairy and it was determined that immediately before this outbreak 8 cases of cholera had occurred in close vicinity of the water tank used by this milkman. Dr. Simpson (133), health officer of Calcutta, describes a limited epidemic which occurred on board the ship *Ardenclutha* resulting in 9 cases and 4 deaths, and affecting, with one exception, consumers of a particular milk derived from a dairy located near a tank into which dejecta from a cholera patient found access, and the milkman, with unusual frankness, also admitted that he had diluted his milk with one-fourth water from this tank. Surgeon-Major Cunningham (134), in an excellent paper on milk as a medium for cholera bacilli, has called attention to the fact that the presence of germs whose growth is associated with impure and contaminated milk, as in India, and consequent acid fermentation is destructive to the development or existence of organisms which, like the comma-bacilli, require an alkaline or neutral medium.

EPIDEMICS OF MILK TYPHOID, SCARLATINA, AND DIPHTHERIA, SORE THROAT, AND ERYSIPELAS.

We know now that disease germs may not only survive, but in many instances actually proliferate in the milk, and it is not a difficult matter to point out the many ways by which they may gain access, especially when some of the employees connected with the dairy or farm

are also engaged in nursing the sick (as in examples marked †), or are suffering themselves from some mild infection while continuing their usual duties, or are convalescents from the disease. (See examples marked ‡).

It is quite conceivable how animals wading in filth and polluted water may infect the udder and through it the milk. (See cases marked !.) We can also appreciate how infected water may convey the germs by washing the utensils or by deliberate adulterations. (See instances marked §.) Infection may also take place through the agency of scrubbing brushes, dishcloths, insects, exposure to contaminated air, etc.

For details of an outbreak of sore throat and erysipelas traced to a common milk supply, see table of diphtheria epidemics, No. 23.

TYPHOID FEVER EPIDEMICS.

Mr. E. Hart tabulated 50 epidemics of typhoid fever and we have collected 88, making a total of 138 epidemics traceable to a specific pollution of the milk, the main facts of which are presented in a subjoined table. In 109 instances there is evidence of the disease having prevailed at the farm or dairy. In 54 epidemics the poison reached the milk by soakage of the germs into the well water with which the utensils were washed and in 14 of these instances (Nos. 5, 24, 39, 45, 70, 89, 90, 98, 99, 103, 111, 116, 124), the intentional dilution with polluted water is admitted. In 6 instances (Nos. 10, 74, 104, 107, 112, 121) the infection is attributed to the cows drinking or wading in sewage-polluted water. In three instances (Nos. 118, 123, 131) the infection was spread in ice cream prepared in infected premises. In 21 instances the dairy employees also acted as nurses (Nos. 1, 6, 12, 16, 17, 24, 30, 37, 38, 41, 46, 52, 65, 68, 82, 110, 111, 115, 126, 127, 133). In 6 instances (Nos. 101, 102, 113, 117, 132, 134) the patients while suffering from a mild attack of enteric fever, or during the first week or ten days of their illness continued at work, and those of us who are familiar with the personal habits of the average dairy boy will have no difficulty in surmising the manner of direct digital infection. In one instance (No. 24) the milk tins were washed with the same dishcloth used among the fever patients. In one instance (No. 87) the disease was attributed to an abscess of the udder, in another (No. 92) to a teat eruption, and in No. 81 to a febrile disorder in the cows. Nos. 85, 103, 120, and 127 were creamery cases. In No. 96 the milk had been kept in the sick room.

TYPHOID FEVER AND CREAM COMPOUNDS.

Mr. Hankins, bacteriologist to the northwestern Provinces and Oudh and the central Provinces, relates in the Indian Medical Gazette the steps by which he traced with great probability two outbreaks of typhoid fever among officers of the East Surrey Regiment to the use of dahi. This preparation is a kind of curdled milk made by Indian confectioners. It is made as follows: Milk is thoroughly boiled in an iron vessel, then allowed to cool and poured into large shallow vessels; to each of these vessels a small quantity of the dahi of the previous day is added and the milk put away under cover in a cool place if the weather is hot, or a warm place if the weather is cold. The next morning the whole of the milk is found to be coagulated—that is to say, changed into dahi ready for sale. Mr. Hankins attributes this coagulation to a specific bacillus which he named *B. dahii*. In the particular specimen of dahi suspected

of being the cause of the cases of typhoid fever Mr. Hankins found the typhoid bacillus, and as the dahi was obtained from a confectioner's shop, near which was a particularly foul well liable to contamination by human dejecta, he thinks the dahi was infected by rinsing the vessels with water from this polluted well.

The dose of typhoid bacilli introduced into the dahi in this way would of course be very small, but Mr. Hankins also ascertained by experiment that during the hot weather a rapid growth would take place, so that the dahi would swarm with the typhoid bacillus. These outbreaks were shrouded in mystery until Mr. Hankins discovered the true cause. In 1893 three officers were taken sick within four days of one another, and two died. In 1894 four officers and one soldier employed in the mess developed the disease within a week, and three deaths occurred. There was thus a special incidence of the disease on persons using the officers' mess, a fact which alone would point to the suggestion that the source of the typhoid fever was to be found in some condition special to that mess, and not in such conditions as the water supply or the regimental dairy, which were common to officers and men. The imitation cream, made of dahi, sugar, and almond essence, fits into this theory, which appears to be clinched by the discovery of the typhoid bacillus in the dahi smuggled into the mess from the confectioner already referred to. (*Brit. Med. Jour.*, 1894, Vol. II, p. 613.)

A writer in the same journal, on page 570, says:

I am now fighting with another typhoid epidemic which I have traced to the milk supplied from one particular farm. The farmer has been prohibited from sending milk into the town. He now converts his milk into butter and sends it to market, which is visited by our retailers. Thus, although he sends no milk into the town, still we may be consumers of his butter. Cream from which butter is made is caused to rise by heat in the west of England. The boiling point of milk is much lower than that of water— 180° to 190° , I think. Would the heat necessary to make cream be sufficient to destroy typhoid germs? In other words, Would the boiling point of milk destroy typhoid germs?

This question was answered as follows: A temperature of 140° F. continued for ten minutes destroys typhoid bacilli. Probably a single minute at 180° F. will have the same effect, but a longer exposure will render the process safer. Not a single drop of the milk should remain unheated, as one drop might reinoculate a whole batch. But heating the milk will not do in this case, as water used for washing utensils, etc., is probably the real source of infection.

SCARLET FEVER EPIDEMICS.

Mr. Hart collected 15 epidemics of milk scarlatina, and we have tabulated 59, making a total of 74 epidemics spread through the medium of the milk supply, the details of which will be found in Table No. II.

In 41 instances the disease prevailed either at the milk farm or dairy. In 6 instances persons connected with the dairy either lodged in or had visited infected houses. (See Nos. 8, 9, 10, 11, 15, 40.) In No. 12 the milkman had taken his can into an infected house. In 20 instances the infection was attributed to disease among the milch cows; in 4 of these (Nos. 17, 18, 19, 35) the puerperal condition of the animal is blamed. In 9 instances disease of the udder or teats were found. (See Nos. 30, 31, 34, 39, 41, 59, 61, 62, 66.) In one instance (No. 54) the veterinarian diagnosed a case of bovine tuberculosis. In 6 instances there was loss of hair and casting of the skin in the animal. (See Nos. 17, 18, 19, 38, 40, 41.) In No. 68 the cattle were found to be suffering more or less from febrile disturbance. In 10 instances the infection was doubtless

conveyed by persons connected with the milk business, while suffering or recovering from an attack of the disease (see Nos. 2, 22, 26, 29, 42, 57, 58, 60, 69, 71), and in at least 8 cases by persons who also acted as nurses. (Nos. 1, 2, 7, 9, 13, 14, 25, 63.) In three instances (Nos. 1, 73, 74) the milk had been kept in the cottage close to the sick room. In No. 15 the cows were milked into an open tin can which was carried across an open yard past an infected house, and in No. 53 the milkman had wiped his cans with white flannel cloths (presumably infected) which had been left in his barn by a peddler. Nos. 21 and 44 appear to have been instances of mixed infection of scarlet fever and diphtheria.

DIPHTHERIA EPIDEMICS.

Mr. Hart collected 7 epidemics of milk diphtheria, and we have added 21 more. (See Table III.) In 10 of these 28 instances diphtheria existed at the farm or dairy, and in 10 instances the disease is attributed directly to the cows having garget, chapped and ulcerative affections of the teats and udder, while in No. 13 the cows were apparently healthy but the calves had diarrhea. (See Nos. 2, 5, 14, 18, 19, 20, 21, 22, 24, 25.) In No. 23 one of the dairymaids suffered from a sore throat of an erysipelatos character, and in No. 27 the patient continued to milk while suffering from diphtheria. In No. 28 one of the drivers of the dairy wagons was suffering from a sore throat.

It is difficult if not impossible to account for the infectious qualities of the milk in those epidemics where scarlet fever and diphtheria could not be found at the milk farm or shops, unless we are permitted to look to the cows themselves as a source of infection, and for reasons already given on pages 309-312, we feel justified in believing that in many instances we have to deal with a staphylococcus or streptococcus infection, while in the typhoid epidemics traced to milk farms or shops, where no cases of enteric fever could be found, we are either forced to the conclusion that the specific germs remained dormant for a long time, or that certain harmless bacteria may acquire virulent properties by suitable environments which, unfortunately too often, exist in connection with our milk farms. The extreme possibility of the infectious germs entering the cans or bottles while the milk is in transit from the farms and shops to the customers in all these obscure instances deserves to be mentioned.

It is interesting to note that of 138 epidemics of milk typhoid, 74 of scarlet fever, and 28 of diphtheria, a total of 240 epidemics, 187 have been recorded by English authors, 31 by American, and 9 by Scandinavian; 8 came from German, 3 from Australian, and 1 each from French and Swiss sources.

Whether this is due to the fact that on the Continent of Europe milk is rarely used in a raw state, or whether it is simply an index of the greater interest taken in England and the United States in "preventive medicine," remains to be determined.

We fail to see, however, wherein Dr. Scholl (164) is justified in regarding the epidemics reported by American physicians with suspicion, when, as a matter of fact, the reports compare favorably with those of the best English authors in the presentation of evidence and attention to details. Dr. Scholl should remember that it was, after all, an American physician who first demonstrated the nature of cheese poison, which, as *venenum casei*, had baffled the efforts of European scientists for over a century, and that the same Professor Vaughan was also the first physician who presented bacteriological evidence in an instance of milk typhoid infection.

SANITARY CONTROL OF DAIRIES AND THE MILK SUPPLY.

According to the United States Census of 1890 we have 16,511,950 milch cows, with an average annual production of 5,209,125,567 gallons of milk, 1,024,233,468 pounds of butter, and 18,726,818 pounds of cheese. The production of milk for 1890 in Great Britain, according to the Royal Statistical Society of London, June, 1892, was 1,417,830,000 gallons for that year.

According to Eisbein the average annual consumption per capita is 12½ quarts or 272 pounds of milk, 33 pounds of butter, and 16 pounds of cheese, requiring about 32 cows for 1,000 inhabitants to supply these quantities.

Dr. J. C. Morrison (165) calculates that in 15 of our American cities, with a total population of 5,000,000, the annual consumption of milk amounts to 400,000,000 quarts, costing the consumers \$32,000,000, of which about \$20,000,000 goes to the producer, while the other \$12,000,000 are absorbed by the middlemen and retailers.

Milk adulteration.—These figures furnish an indication of not only the extent of milk consumption but also of the amount of danger from an impure supply, and, lastly, of the temptation, which still exists from a monetary point of view, for the practice of shameful adulterations. The most frequent of these are the intentional dilution with water, the removal of some of its cream, and the addition of skimmed milk, and to cover up these starch, finely ground calves' brains, common salt, and other substances are added.

The report on the milk supply of London by a special analytical and biological commission (166), published in the British Medical Journal for July 6, 20, and 27, shows how extensively milk sophistication is still carried on, even in good old England. Thus Mr. Pattinson found at Newcastle the milk supplied to the workhouse contained 18 per cent of added water; that to the barracks, 36 per cent; two samples supplied to the Girls' Orphanage contained, respectively, 22 and 18 per cent; two samples supplied to the Deaf and Dumb Asylum, 18 and 14 per cent, and three samples from the milk supplied to the Fleming Memorial Children's Hospital were each adulterated with 30 per cent of added water.

Of the 30 samples purchased at random in the poorer districts of London during the month of June, 1895, only 6 were reported as being of genuine composition; 16 were found to be sophisticated by the addition of water or the abstraction of fat, or both; 1, while otherwise of genuine composition and fair quality had been tampered with by the admixture of a boric acid preparation, and 9 of the otherwise sophisticated samples having also been found to contain boric acid. A very common fraud appears to be the removal of cream and adding just enough "separated milk" until the amount of fat present is on the limit that will "pass" the public analyst, and the Journal justly remarks, "the fraud is as obvious as any for which the law provides punishment, far more drastic than that which is ever visited upon the milk swindler." The introduction of "cream separators affords an opportunity of removing almost the whole of the fat from milk, and the sophisticator has thus the power of reducing its cream to the lowest salable standard without exposing himself to any such risk of detection as would attend the process of 'watering,' a process by which the total nonfatty solid might be so reduced as to lead to the detection of the fraud."

The chemical examination of 17 brands of condensed milk shows even a more deplorable state of affairs, as 14 were found to be prepared entirely from skimmed milk and show an average of only 0.72 per cent of fat, and only 3 brands prepared from partly skimmed milk or from skimmed milk to which a small proportion of unskimmed milk has been added show an average of 3.14 per cent of fat.

Genuine full cream brands of condensed milk, such as the well-known "Milkmaid" brand, prepared by the Anglo-Swiss Condensed Milk Company, contain from 10 to 12 per cent of fat.

Now let us look for the beam in our own eyes.

According to the sanitary engineer quoted by The Analyst (167), numerous analyses of the milk sold in the city of New York clearly established the fact that this important article was shamefully adulterated, and that on the average at least 33 per cent of water was added to the original milk, while a considerable part of the cream was often removed. It was also found that most of the condensed milk companies skimmed the milk before concentrating it. The total frauds of milkmen amounted to about \$10,000 per day.

The State inspectors for New York (168) found in the adulterated milk examined: Highest per cent of water added, 25; lowest, 3; average, 12; highest per cent of cream removed, 95; lowest, 5; average, 20. Dr. Walter H. Kent (169), chemist of the Brooklyn department of health, in March, 1889, examined a number of samples of condensed milk, with reference to previous skimming, the results of which are shown in the tabular statement, and from which "it must be concluded that samples 3 to 19, inclusive, were made from milk, the cream of which had been more or less removed:"

Dr. Kent's tabular statement of fresh and condensed milk analyses.

No. of sample.	Brand, etc.	Price.	Fat.	Albuminoid.	Water.	Ash.
			<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
1	Bottled market milk, Dairy A.....	8 cents per quart.....	4.07	3.37	87.08	.69
2	Bottled market milk, Dairy B.....	.....do.....	3.81	3.24	87.43	.68
3	Anglo-Swiss condensed milk.....	1-pound can, 14 cents..	5.88	7.03	23.07	.....
4	.....do.....	.....do.....	6.06	8.41	26.37	1.88
5	Rose Brand.....	1-pound can, 10 cents..	7.16	8.32	26.63	1.80
6	.....do.....	.....do.....	6.91	8.34	.....	.....
7	Rigi Brand, Franco-Swiss Co.....	1-pound can, 13 cents..	.22	.....	25.08	.....
8	.....do.....	.....do.....	.70	8.88	30.90	2.27
9	Eagle Brand (New York) Condensed Milk Co.....	1-pound can, 17 cents..	6.04	8.21	23.69	1.67
10	.....do.....	.....do.....	5.48	7.83	.....	.....
11	Crown Brand.....	1-pound can, 15 cents..	6.81	7.89	30.00	1.89
12	.....do.....	.....do.....	7.28	7.86	.....	.....
13	Daisy Brand.....	1-pound can, 12 cents..	6.13	8.42	26.66	1.59
14	Champion Brand.....	1-pound can, 10 cents..	6.10	8.41	24.58	1.88
15	.....do.....	.....do.....	5.18	8.33	.....	.....
16	Dime Brand.....	12 ounces, 10 cents..	4.73	8.53	25.13	1.86
17	.....do.....	.....do.....	5.78	8.54	.....	.....
18	Osprey Brand, S. W. Canfield.....	1-pound can, 13 cents..	6.51	9.02	26.57	1.91
19	.....do.....	.....do.....	4.93	9.04	.....	.....
20	Nestle's condensed Swiss milk.....	1-pound can, 16 cents..	9.44	9.18	24.84	2.00
21	Darling Brand (Michigan) Condensed Milk Co.....	1-pound can, 10 cents..	8.77	8.79	24.84	1.81
22	Condensed milk from wagon, New York Condensed Milk Co.....	.....	10.93	10.16	59.81	2.14
23	Condensed milk from wagon, S. W. Canfield.....	.....	13.17	10.50	59.43	2.19

Dr. Spiegelhalter (170), of St. Louis, from a large number of examinations, concludes that the consumers are robbed of 8 per cent of cream to which they are entitled, and as in a city of 400,000 inhabitants the average daily consumption of milk amounts to 80,000 quarts or 20,000 gallons, the missing 8 per cent of cream for 20,000 gallons amounts to 1,600 gallons per day, which, at \$1.20 a gallon, is worth \$1,920 a day, or \$700,800 a year, and yet there are many communities, and St. Louis at that time was one of them, perfectly willing to see its citizens robbed of \$900,000 per annum, largely made up of the pennies of poor and sickly women and half-starved children, in order to save \$4,000 or \$5,000, which the sanitary control of the milk supply of the city would cost.

It is a noteworthy fact that the capital of this nation had no law regulating the quality of milk until the last session of Congress (1894-95), and even then the bill met with violent opposition before the Senate committee and would have been defeated had not Dr. Busey, as president of the medical society, submitted an abundance of evidence on milk infection. As it is, the bill is by no means a model of sanitary legislation; the standard adopted for total solids is 12; 3 per cent of which must be fat; the low standard for fat virtually legalizes dishonest manipulations of the milk, or else places a premium on indifferent care and breed of the dairy stock.

The good effects of legislation are well shown by the following letter, written by Dr. H. A. Pooler, of Goshen, N. Y., to Dr. J. C. Morris (165):

The amount of milk fluid used in New York City, Jersey City, and Brooklyn in 1882 was about 500,000 quarts per day, made up of 300,000 quarts of pure milk, 80,000 quarts of skimmed milk, and 120,000 quarts of water. The 200,000 quarts of adulteration by water and skimmed milk so reduced the nutriment as to produce an increase in the mortality of children to a fearful extent. The amount of adulteration was reduced from 200,000 to 100,000 quarts per day by the persistent efforts of the board of health, aided by the facility the railroads gave them by allowing them to inspect the milk in transit on the trains to the city, which has had a very happy effect by reducing the death rate of children in the city of New York alone, under 5 years of age, 3,673 less in 1883 than in 1882, other conditions of the city being about the same. We found the adulteration was done by the middlemen through whose hands the milk passed.

It is true that many of our States have enacted laws by which the grosser forms of adulteration have been to a certain extent checked, but much remains to be done here as elsewhere, as shown by the following facts: Professor Hird (171), the chemist of the health office for the District of Columbia, during the year ending June 30, 1894, made analyses of 1,175 samples of milk; of these, 317 were collected immediately on their arrival at the depots, and while some had evidently been tampered with, the average percentage of fat was 3.38, while the 798 samples collected about the city showed only a percentage of 3.27, or a removal of nearly 20 per cent of the richness of the milk, on an average. As a matter of fact 249 of these samples were below 3 per cent of fat. Convictions were secured in only 33 of these cases, because the law then in force provided a penalty only when something had been added to the milk and did not take into consideration at all milk which had been deprived, either in part or in whole, of its cream. Professor Hird justly remarks: "This is, in my opinion, radically wrong, for in addition to imposing a fraud upon the public, it leaves no room for honest dealers in milk to compete with those of the other class."

In regard to condensed milk we have the most recent data, published by Dr. Albert R. Leeds (172), who analyzed 15 different brands for the State board of health of New Jersey, and the results of which are shown in the subjoined tables:

LEEDS'S TABLE I.—*Milk condensed with cane sugar.*

Brand.	Color-tint.	Taste.	Odor.	Reaction.
Tip Top.....	Reddish-brown	Very sweet.....	Normal	Very slightly acid.
Eagle.....	Yellowish-brown	Sweet and pleasant.....	do	Nearly neutral.
Champion.....	do	Sweet and dry	do	Do.
Daisy.....	Brownish-white	do	do	Do.
Full Weight.....	Yellowish-brown	Sweet.....	do	Neutral.
Sweet Clover.....	Light yellowish-brown.....	do	do	Nearly neutral.
Challenge.....	Dark yellowish-brown.....	do	do	Neutral.
Magnolia.....	Nearly white	Cheesy	Cheesy	Acid.
C. and S.....	Yellowish-brown	Sweet.....	Normal	Neutral.
Atlas.....	do	Sweet and pleasant.....	Like whole milk.....	Slightly acid.
Leader.....	Light brownish-white	Sweet.....	Normal	Do.
Standard.....	Brownish-white	do	do	Nearly neutral.
Winner.....	Reddish brown	Buttery.....	Faint cheesy.....	Do.
Bell.....	Yellowish-brown	Sweet and pleasant.....	Normal	Do.
Red Cross.....	Brownish-white	Sweet, unpleasant ..	Unpleasant.....	Slightly acid.

LEEDS'S TABLE II.—*Milk condensed with cane sugar.*

Brand.	Water.	Fat.	Casein and albumen.	Milk sugar.	Ash.	Cane sugar.	Milk solids.	Fat in original milk.	Times condensed.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Tip Top.....	26.00	10.17	9.22	11.37	1.99	41.25	32.75	3.88	2.62
Eagle.....	28.32	9.11	9.06	10.11	1.91	41.49	30.19	3.78	2.41
Champion.....	27.72	9.60	9.52	10.11	1.83	41.22	31.06	3.87	2.48
Daisy.....	25.53	9.41	8.71	13.43	1.83	41.09	33.38	3.52	2.67
Full Weight.....	28.18	9.00	7.87	11.70	1.88	41.37	30.45	3.70	2.43
Sweet Clover.....	28.70	10.30	8.47	11.31	1.83	39.39	31.91	4.17	2.47
Challenge.....	28.44	9.86	8.99	10.05	1.82	40.84	30.72	4.04	2.45
Magnolia.....	30.04	9.48	8.17	12.81	1.91	37.59	32.37	3.66	2.59
C. and S.....	26.99	9.11	8.68	16.98	2.15	36.09	36.92	3.09	2.95
Atlas.....	28.30	7.64	10.91	10.79	1.83	40.53	31.17	3.06	2.49
Leader.....	28.20	8.02	8.01	11.32	1.80	42.65	29.15	3.44	2.33
Standard.....	27.21	7.79	8.21	13.30	1.85	41.64	31.15	3.12	2.40
Winner.....	29.84	9.63	9.82	11.17	1.98	37.56	32.60	3.70	2.60
Bell.....	25.54	12.13	8.87	10.51	2.05	40.90	33.56	4.52	2.68
Red Cross.....	29.34	8.80	7.81	10.00	1.76	42.29	28.37	3.87	2.27
Average	27.89	8.67	8.82	11.66	1.83	40.39	31.71	3.69	2.52

The evidence of the analyses indicates that the manufacturers prefer, and generally do use, unskimmed milk, because the chief expense is the evaporation of water. Professor Leeds calls especial attention to the changes which result in producing condensed milk of a slimy, cheesy, or semisolid character, while other samples undergo putrefaction, liberating gases which distend or burst the can, all of which he attributes "to specific bacterial ferments getting into the milk before the process of condensation;" he refers to the circumstances under which they get into the milk, and points out that the interests of the public coincide with those of the manufacturers, as they have to take back the cans, which spoil in time on the shelves of the grocers from the causes mentioned, and which could be avoided by a rigid system of inspection, beginning with the dairy and the cattle. A review of the evidence on milk sophistication, both here and in England, shows that the laws which have been enacted to protect our pocketbooks have fallen short of their aim unless they were intended primarily to favor the producer of milk. "The glaring cases which come under the notice of the authorities afford no evidence as to the actual extent of these frauds, but they simply show that in these instances the milk had been so recklessly treated as to pass beyond the limits of a low official standard of milk."

NECESSITY FOR SANITARY CONTROL OF DAIRIES.

When we recall, however, the many ways by which milk may acquire morbid properties, we see the necessity for the proper protection of the public by placing dairies, the herds, and the milk market under a strict sanitary control. Honorable men will scarcely object to regulations calculated to promote the purity of their products and the health of their customers, and, as many of the most serious faults are the result of ignorance rather than intentional fraud or negligence, the difficulties will be materially lessened by proper education and trade competition. At all events, the dairyman will conclude in the end that it is money in his pocket to comply with requirements which at present may appear to him as the outcome of exaggerated fear or extreme sanitary zeal.

Since it has been shown that many of the evils are directly due to the condition of the dairy stock, their care and feed, it will be in the highest degree good policy if the owner is required to subject his stock to frequent inspection by a competent veterinarian, and all animals found to be suffering from diseases like tuberculosis, erysipelas, anthrax, pleuro-pneumonia, foot and mouth disease, septic and other fevers, specific enteritis and other intestinal disorders, rabies, tetanus, garget, and other inflammatory conditions of the teats and udder, also those animals which are being treated with medicaments for any or all causes, are disqualified from producing a pure or sound milk and should be excluded. The milk of animals five days before and after parturition is likewise unfit for human consumption.

A compulsory inspection of the dairy stock will be a source of ultimate profit to the owner, as the presence of tuberculosis, or any other communicable disease endangers his entire herd, and great losses can be prevented by the prompt isolation or extermination of the first cases. The farmer will likewise find it of benefit if he is enjoined from interbreeding more frequently than the fourth generation, and is obliged to house his cattle in spacious, well-ventilated, and well-lighted stables, with good cemented floors, proper drainage, and clean hay or straw for bedding. The cow stables must be separate from other stock and poultry yards, and their pollution with human filth should not be tolerated. The water supply should be ample and of a pure quality, and the feeding should be arranged to secure the best possible results as regards the health of the animals and excellence of the milk. An abundance of wholesome pasture in season with hay and meal fodder should be allowed. At some of the "milk-cure institutes" in Germany (173) each cow is allowed daily 10 pounds of meadow hay, 17 pounds of clover hay, 6 pounds of hulled barley meal, and 4 pounds of wheat flour, and the animals are not allowed to range at large for fear they might obtain improper food or be overheated.

The animals must not be allowed to feed upon pastures with stagnant water or noxious weeds, such as meadow saffron, henbane, Jamestown or stink weed, poppies, mustard, carrot tops, milkweed, poison oak, sumach, skunk cabbage, and other euphorbiaceous and ranunculaceous plants, nor upon the swill or products from distilleries, breweries, glucose factories, etc. The use of turnips, kohlrabies, ruta-bagas, carrots, mangels, and the leaves of all kinds of root crops should likewise be prohibited.

The animals should be groomed daily and the teats and udders thoroughly washed before milking, with water previously boiled. The necessity for this has been repeatedly pointed out and is of special

importance, since we consider the presence of excrementitious matter and fecal bacteria in milk next in danger to the presence of disease germs. The requirements of cleanliness apply with equal force to the milkmen, their persons and clothing, and they should be requested to keep their finger nails free from dirt and make a careful toilet just before milking. All persons engaged in handling the milk should be free from disease. No family ever thinks of employing or keeping a cook afflicted with a communicable disease, and yet not the slightest restriction is placed upon, nor a question asked about, the persons who handle our milk supply, which we know affords an excellent culture medium for disease germs.

The milking should be done in a dust-free atmosphere, preferably on cemented floors, previously sprinkled, in order to reduce the number of germs to a minimum. After the recital of numerous epidemics and milk-borne diseases, we need hardly insist upon the necessity of compulsory notification of all infectious diseases, and that milk should not be permitted to leave a farm, dairy, or grocery during the existence of any of these diseases among the inmates or employees, nor should the latter be permitted to reside in or visit infected premises while engaged in the milk traffic. To prevent the great loss incident to these restrictions they may be modified so as to permit the utilization of such milk for butter, after proper sterilization under the direction of the health department.

Attention has already been called to the necessity of absolute cleanliness of the utensils, etc., in order to prevent rapid souring, and to the fact that bacterial growth may be materially lessened by reducing the temperature of the milk after leaving the udder, as rapidly as possible, to about 40° F. For this purpose the milk should be placed in a cold spring, ice-water tank, in a cold-air chamber, or in the coolers specially made for the purpose, but always in a dust-free atmosphere.

It is also a good plan to mix the product of each 10 cows together, not only to insure uniformity, but also to diminish the danger of transmitting disease germs from any one animal in concentrated doses.

After cooling, the milk should be transferred to bottles which have been thoroughly cleansed by steam or in a weak solution of boiling soda water and subsequently rinsed in sterilized water and dried. The bottles should be closed with patent stoppers, labeled as containing cream, "full," or skimmed milk, and sealed, with the name of the dairy, to prevent adulteration in transit. The bottles should be placed in suitable boxes, covered with ice, if necessary, to insure delivery to the customer at a temperature not above 60° F. The retailer should be duly registered and be required to furnish the health office with a list of customers. These lists should be arranged at that office on the "index-card system," so that the simultaneous occurrence of infectious diseases in a number of families supplied by the same milkman may be promptly discovered and the mischief checked.

There is nothing strained in these requirements, as good and sufficient reasons have been given in preceding pages for every one of them, and by means of them we may hope to obtain such a standard of milk as will not only effect a decided reduction in infantile mortality, but will render the dissemination of infectious diseases through the milk supply a matter of history only.

Milk standards.—A question of considerable importance is the adoption of some uniform standard of milk which, while fulfilling modern sanitary requirements, will also be just to the producer.

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Since the composition of milk varies greatly according to breed, feed, climate, and seasons, it is only fair that if a legal standard for the composition of normal milk is fixed, it should be based upon a large series of analyses.

The following figures give the averages obtained by different chemists. Vieth's data are based upon 120,545 samples, and König's upon 377 analyses of milk.

	Total solids.	Nonfatty solids.	Fat.
Vieth (174)	12.90	8.80	4.10
Soxhlet (175)	12.00	8.50	3.50
Leeds (176)	12.61	8.86	3.75
König (175)	12.58	8.93	3.65
Average	12.52	8.75	3.75

From these data we have a right to expect a milk containing 12.52 per cent of total solids, composed of 8.75 per cent nonfatty solids, and 3.75 per cent fat, and also that the legal standards be modified accordingly.

Official milk standards in force in different States and cities.

Sta+ city, etc.	Percentage by weight of solids.		
	Total.	Nonfatty.	Fat.
United States Treasury Department.....	13.00	9.50	3.50
Des Moines, Iowa.....	13.10	.....	3.50
Minnesota.....	13.00	9.50	3.50
Massachusetts.....	13.00	9.30	3.70
Massachusetts, May and June.....	12.00	.....	.....
Pennsylvania.....	12.50	9.50	3.00
Columbus, Ohio.....	12.50	9.375	3.125
Michigan.....	12.50	9.50	3.00
Vermont.....	12.50	9.25	3.25
New York.....	12.00	9.00	3.00
New Jersey.....	12.00	9.00	3.00
Baltimore, Md.....	12.00	.....	.....
Denver, Colo.....	12.00	.....	.....
Portland, Oreg.....	12.00	.....	.....
Omaha, Nebr.....	12.00	.....	3.00
Philadelphia, Pa. (city ordinance).....	12.00	8.50	3.50
District of Columbia.....	12.00	.....	3.00
England (public analysts).....	11.50	8.50	3.00

While it is true that there are instances of deficiency of solids in milk known to be genuine, it is equally true that there are many instances of unusually rich milk where the total solids amounted to 19.50 per cent, and for obvious reasons we can only deal with averages, based upon a large number of samples.

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Influence of breed upon composition of the milk.—The following figures, taken from Bulletin 77, 1890, New Jersey State Agricultural Experiment Station, show the average composition of milk of various breeds of cattle:

Average composition of milk for eight months.

Herd.	Specific gravity.	Water.	Total solids.	Fat.	Casein.	Sugar.	Ash.
		<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Perct.</i>
Ayrshire.....	1.0341	87.30	12.70	3.68	3.48	4.84	0.69
Guernsey.....	1.0350	85.52	14.48	5.02	3.92	4.80	.75
Holstein-Friesian.....	1.0528	87.88	12.12	3.51	3.28	4.69	.64
Jersey.....	1.0353	85.06	14.34	4.78	3.96	4.85	.75
Shorthorn.....	1.0339	87.55	12.45	3.65	3.27	4.80	.73

Influence of season.—The following table was condensed by Leffmann & Beam (180) from the above report:

	Ayrshire.		Holstein-Friesian.		Jersey.		Guernsey.		Shorthorn.	
	Total solids.	Fat.	Total solids.	Fat.	Total solids.	Fat.	Total solids.	Fat.	Total solids.	Fat.
March.....	13.00	3.95	12.46	3.89	14.99	5.06	15.29	5.46	13.99	4.69
April.....	13.09	3.85	12.39	3.84	14.83	5.32	14.95	5.20	12.76	3.89
May.....	12.97	3.54	12.57	3.65	13.67	4.30	14.00	4.57	12.05	3.24
June.....	12.58	3.42	12.99	3.73	13.42	4.08	13.86	4.55	11.97	3.23
July.....	12.72	3.71	11.44	3.11	13.46	4.13	13.85	4.54	11.89	3.28
August.....	13.08	4.07	11.38	3.05	13.60	4.22	13.93	4.81	12.08	3.56
September.....	11.85	3.26	11.67	3.23	15.00	5.08	14.67	5.22	12.24	3.47
October.....	12.27	3.60	12.08	3.55	15.75	5.71	15.28	5.78	12.61	3.82

Similar observations have been made in England and Germany. According to Vieth the poorest quality of milk is furnished during the first half of the year, especially in April, and a bad season for haymaking, hard winters, or prolonged spells of heat, cold, or wet influence the quality and quantity of milk. The average composition of the milk from 273 individual cows, as determined by Professor Bell at the request of the local government board (177), was total solids, 12.90; solids not fat, 8.91; fat, 3.99, and the total solids in milk of individual cows was found to fluctuate from 10.33 to 15.83 per cent, while the fat in the same manner varied from 2.43 to 5.97 per cent. The report justly states, "If between these limits a high standard were fixed the result would be to condemn much genuine milk, while if a low standard were adopted pure milk would be watered down to it."

The public analyst for Cheshire has taken the trouble to follow up cases of poor milk to their source, and in a case in which it did not come up to the standard (which for England is, total solids, 11.50; nonfatty solids, 8.50, and fat, 3 per cent) he "found five half-starved cows, which were nothing more than animated bundles of bones," and he truly remarks that "it must be perfectly patent to all that the milk supply of the United Kingdom is not to be brought down to such samples."

What is the proper remedy?—From the foregoing evidence it appears that it would be manifestly unjust to condemn a milk as adulterated when it has more than 87.5 per cent water. On the other hand, the adoption of a minimum standard would result in the sale of a very large quantity of adulterated milk, which, apart from diminishing the nutritive value of the milk—a matter of great importance in infant feeding—is often, as we have seen, the immediate cause of transmit-

ting disease germs by the addition of infected water. In the opinion of the writer all this can be prevented and milk of uniform standards can be obtained by encouraging the establishment of milk depots like the Walker-Gordon laboratories of Boston, of which Dr. T. M. Rotch (178) and more recently Dr. R. T. Taylor (179) speak as follows:

The farm and herd are under the absolute control of the laboratory, and are used for laboratory purposes only; the cows, their food, their stables, their pasture, and their drinking water are subjected to the frequent, paid, critical examination of the best veterinary surgeon that can be procured in Boston. The dairymen dress in white suits before milking, having each previously had a bath. The cows are milked into glass pails, and the milk, after being aerated and cooled to about 44° F. in a tank of ice and water, is delivered at the laboratory in Boston within four hours of the milking. The average and almost stable analysis of this original milk shows a percentage of—

Fat.....	3.90
Milk sugar.....	4.30
Proteids.....	4.00
Salts.....	0.65
Total solids.....	12.85
Total liquids.....	87.15

At the laboratory a ventilating engine keeps up a constant change of air, and a hose keeps the enameled brick walls and stone floors wet to prevent any remaining dust from contaminating the milk while it is being "modified." The whole milk, after being "pasteurized," passes through a Stockholm separator, which makes 6,800 revolutions a minute, and yielding a cream of an almost constant 16 per cent fat. It not only does this, but it removes all dirt that from unavoidable causes has gained access to the milk, thus yielding a clean, skimmed milk, practically free from fat (only 0.13 per cent remaining). The modifier has as a result stable component parts of the original milk to work with, made up by analysis, as follows:

	Fat.	Sugar.	Proteids.
Cream giving.....	16.00	4.00	3.60
Skimmed milk giving.....	0.13	4.40	4.00

The advantages of such milk laboratories are manifold, and among others would accomplish the following objects, viz:

- (1) The source of the original milk would be closely controlled.
- (2) The producer would be paid according to the quality of the milk.
- (3) The milk would be pasteurized before it reached the consumer.
- (4) The milk would be sold under uniform standards of "full" and "skimmed" milk, and its sale perfectly controlled by the sanitary authorities.
- (5) The milk could be modified in the laboratory according to the wishes of the consumer, and for invalids and bottle-fed children, according to the formula of physicians, with a justice and accuracy not possible by any other method.
- (6) Condensed milk preserved in glass bottles is a special necessity during the prevalence of blizzards or other interruption of the milk traffic, also upon long journeys, and since a higher standard than the present is demanded for correct infant feeding the milk could be modified by the addition of sugar of milk and thus form the best possible basis for condensed milk of a proper standard.

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APPENDIX.

TABLES OF EPIDEMICS.

TABLE I.—*Epidemics of milk-Typhoid (Harts).*

No.	Date.	Place.	Number of cases.	Number of deaths.	Number of cases among milk consumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
1†	October and November, 1857.	Penrith.....	.....	.....	.....	.....	The outbreak, which affected 7 families, was traced to a supply derived from a milkman in whose cottage were cases of typhoid fever. The milk was kept in the kitchen, where the children lay, and the mother, who was the nurse, also milked the cows.	Dr. M. W. Taylor, Edin. Med. Jour., May, 1858; Brit. Med. Jour., Vol. II, 1870, p. 623.
2	July and August, 1870 ..	Islington (part of)....	175	30	175	106	No evidence of typhoid fever at the premises; there was an underground water tank at the milk shop, communicating by means of rat burrows with two old drains, possible overflow of sewage from these into the tank, from which the water was used to wash the milk cans.	Dr. E. Ballard, M. O. H. Brit. Med. Jour., Vol. II, 1870, p. 589; Med. Times and Gazette, Vol. II, 1870, p. 611.
3	July and August, 1872 ..	Armley, near Leeds ..	107	11	.....	.....	Traced to a milk farm where typhoid occurred in May, dejecta suspected to have been thrown on dung pit; in the latter part of patient's illness copious rains fell and probably washed the germs from the pit or polluted soil into the well, as about this time the cause of the fever began to operate among consumers of the milk.	Dr. E. Ballard, M. O. H. Reports Medical Officer of privy council and local government board, Vol. II, 1874, p. 79.
4	October and November, 1872.	Leeds.....	93	14	80	86	Typhoid fever at milk farm since September. Water supply pure, sick room communicated with kitchen and dairy, and the air of these premises common. Kitchen drain communicated with manure heap, and the privy which received typhoid excreta was overflowing.	Dr. M. K. Robinson, M. O. H. Brit. Med. Jour., Vol. I, 1873, p. 68.
5‡	November and December, 1872.	Moseley and Balsall Heath.	96	10	.....	.....	A case of what was no doubt typhoid fever occurred in a house located between two milk sellers; dejecta thrown into the privy from which the virus must have found access to the water of the milk sellers' wells. One of them polluted the milk, the other made no profession of selling it pure.	Dr. E. Ballard, M. O. H. Report Medical Officer local government board, No. II, 1874, p. 92; Brit. Med. Jour., Vol. I, 1873, p. 68.
6†	January, 1873.....	Parkhead, Glasgow....	39	6	46	86	Typhoid fever at dairy among the children in December. Milkmen also nursed the affected children.	Dr. J. B. Russell, M. O. H. Glasgow Med. Jour.

REPORT OF COMMISSIONERS OF DISTRICT OF COLUMBIA. 1401

Dr. E. WARDER.

7	April, 1873.	Chesler.....	15	15	100	Cases of fever at the milk shop in latter part of 1872; a grocery and provision shop used as a receptacle for milk. Occupant of milk farm died of typhoid fever; dejecta buried in an ash heap, the soakings from which must have found access to the well used for dairy purposes.
8	July and August, 1873.	Marylebone and adjoining districts.	244	218	89	No case of typhoid occurred at the milk farm till August, 1876, when the epidemic had lasted for three years. Contagion originally reached farm probably through the water entering the well in the yard, carrying the germs from elsewhere, after which the water used for washing milk utensils had an opportunity of specific pollution at the farm.
9	July, 1873, to November, 1877.	Ascot.....	69	58	84	No typhoid fever at milk farm or dairy; cows healthy, but drank from a cesspool. Complaints of milk smelling badly and becoming offensive after standing awhile.
10	August, 1873.	Brighouse, Yorkshire.	68	65	95	Two children of dairyman sick with typhoid fever in August. Well within a few inches of old flat-bottomed brick sewer. Epidemic stayed by cutting off the supply of pump water by this milkman.
11	August, 1873.	Wolverhampton.....	63	14		First person attacked was the dairyman. Wife nursed him and milked the cows. The dairy well upon analysis was found "little better than filtered sewage;" no evidence, however, of specific pollution.
12	May and June, 1874.	Brierly Lane.....	65	50	76	No evidence of typhoid fever at the source of milk supply. Well water of the dairy subject to "fearful contamination with sewage."
13	June, 1874.	Taunton.....	5	5	100	Farmer's wife sickened of typhoid during outbreak. Well close to house, drain roughly made of stone. Earth between drain and well saturated with sewage.
14	August, 1874.	Queensbury.....	36	34	94	Typhoid fever cases at farm, 4 patients occupied a bedroom adjoining the milk store. Well water reported to be contaminated with the products of decomposing organic matter of the nature of sewage.
15	October and November, 1874.	Dundee.....	19	19	100	Two of the firm children had suffered from the disease; dejecta thrown either on the manure heap or into the ditch. Nurses also connected with the collection and disposal of the milk. Well water quite impure.
16	February and March, 1875.	Croschill, Renfrewshire.	153			

Drs. J. N. Radcliffe and W. H. Power. Report Medical Officer local government board, No. II, 1874, pp. 103-136; Brit. Med. Jour., Vol. II, 1873, pp. 206, 207, 208.

Dr. E. Ballard. Brit. Med. Jour., Vol. I, 1880, p. 83; Report Medical Officer local government board for 1877, p. 39.

Dr. T. Britton, M. O. H. Brit. Med. Jour., Vol. II, 1873, pp. 267 and 334.

Dr. J. H. Love, M. O. H. Brit. Med. Jour., Vol. II, 1873, pp. 267, 290, 334, 447.

Dr. R. T. Thorne. Brit. Med. Jour., Vol. II, 1874, p. 391; Sanitary Record, Vol. I, 1874, p. 214.

Dr. H. J. Alford, M. O. H.

Annual Report of Medical Officer of Health for 1874.

Dr. G. C. Pirie, M. O. H. Brit. Med. Jour., Vol. I, 1875, p. 225.

Drs. H. D. Littlejohn and E. Duncan. Brit. Med. Jour., Vol. I, 1875, p. 391; Sanitary Record, Vol. II, 1875, p. 91.

TABLE I.—*Epidemics of milk-Typhoid (Harts)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
17†	August, 1875.....	Jarrow	34	2	31	91	Six of the farmer's family, including him- self, found ill with typhoid. Direct com- munication between dairy and sick room. Dairy also used as a wash house. The daughter acted as nurse and milkmaid.	Dr. John Spear, M. O. H. Brit. Med. Jour., Vol. II, 1875, p. 372; Sanitary Record, Vol. III, 1875, p. 195.
18	September, 1875.....	Glasgow†	259	3	58	98	Two cases of typhoid at farm. Washing for patients done on August 3, 10, and 27 in a wash house, closely situated near the pump well. Water quite impure. Traced to this same milk supply as the epi- demic of 1875.	Dr. J. B. Russell, M. O. H. Brit. Med. Jour., Vol. II, 1875, p. 535.
19	September, 1875.....	Glasgow †	121	3	98	81	No typhoid fever cases at farm, which, how- ever, depended for its water supply upon a brook which had been fouled with the excrement of men engaged in building a mill 200 yards off. There was "evidence that some individual who had used the stream had suffered from diarrhea." (See above.)	Do.
20	January and February, 1876.....	(a) Eagley and Bolton	105	13	.....	.....	A farmer allowed a case to be brought into his house, and after a while 3 servants and several members of his family were taken sick with enteric fever, and commu- nicated the disease to over 20 consumers of the milk.	Dr. W. H. Power to local govern- ment board; J. Robinson, M. O. H. Brit. Med. Jour., 1876, pp. 201, 233, 273, 293, 491.
23	February, 1876.....	(b) Bolton..... Greenock.....	144 20	8	.....	.....	A case of fever at the farm; well water un- fit for drinking purposes, but farmer de- cided having used it for dairy purposes. Important case of typhoid fever at dairy; de- fects traced in a drain, emptying into a brook which was used for dairy purposes. Sixteen cases of typhoid at the farm within twenty years. Well close to privy cess- pool, and a yard or so off was a sink for dirty water.	Brit. Med. Jour., Vol. I, 1876, p. 425; Sanitary Record, Vol. IV, p. 234.
21	Autumn, 1876.....	Churwell and Morley	(4)	9	.....	.....	Recent cases of typhoid at farm. Milk thus washed with the same dishcloth as used among the fever patients; farmer nursed children and milked cows.	Dr. J. C. Clarke, M. O. H.
22	November, 1876.....	Great Coggeshall.....	28	.....	28	100		Dr. R. T. Thorne. Official report.
23	December, 1876.....	Salford	13	.....	13	100		Dr. J. Tatham, M. O. H. Annual Report of Medical Officer of health for Salford, 1875-76.
24†	December and January, 1876-77.....	Barrowford (Lancas- shire).....	57	7	57	100		Dr. T. Dean, M. O. H. Medical Times and Gazette, Vol. I, 1877, p. 72.
25	1877.....	The Gurnos Yataly- fera.....	7	.....	7	100	Milk dealer's son sick with typhoid fever. Milk stored in a pantry leading out of the living room of a small, overcrowded house.	Dr. H. F. Parsons. Report on san- itary condition of Fockesbarrow rural sanitary district, 1880.

26	January, 1877.	Greenock.....	20	16	80	No details.....	Dr. J. Wallace, M. O. H. Brit. Med. Jour., Vol. I, 1877, pp. 275 and 329.
27	February, 1877.	St. Pancras (part of northeast district of parish).	35	30	85	Sudden and explosive outbreak traced to a milk supply, with no evidence of enteric fever at milk shops or farms. Water supply contaminated with filth.	Dr. T. Stevenson, M. O. H. Brit. Med. Jour., Vol. I, 1877, pp. 275 and 329.
28	August, 1877.	Edinburgh, Coltbridge.....	(5)			A case of typhoid fever at dairy community caused the disease to over twenty families.	Brit. Med. Jour., Vol. II, etc., 1877, p. 392.
29	October and November, 1877.	Tunbridge Wells.....	68			Milk supplied from various sources; no typhoid fever at the farms, but at one of them the sewage of the town flowed through the cow yard; in the village there had been cases of typhoid fever.	Dr. W. H. Kix, M. O. H.
30	December and January, 1877-78.	Glasgow and Hill-head.....	166	16		Typhoid fever at one of the supplying milk farms; nursing performed also by dairy hands; dejecta thrown into a channel running on each side of the central passage provided in byres for cattle droppings. From the middle of the byre the washing house was entered, and through this the milk house.	Dr. J. B. Russell, M. O. H. Brit. Med. Jour., Vol. I, 1878, pp. 101, 165, 270.
31	January to March, 1878.	Morsside, near Manchester.	32	29	90	Two deaths from typhoid at farm in February; well in close contiguity to ash pits, and water found to be sewage polluted.	Dr. E. Sutcliffe, M. O. H. Med. Times and Gazette, Vol. I, 1878, p. 517.
32	July and August, 1878.	Bristol ⁶	131	131	100	A young lady visited the farm in June, just convalescing of typhoid fever. One of the farm servants ill August 1. Cesspool overflowing and its contents were traced by a recurrent course to well, which was used for dairy purposes.	Dr. D. Davies, M. O. H. Brit. Med. Jour., Vol. II, 1878, p. 236; Sanitary Record, Vol. II, 1878, pp. 100-166.
33	August, 1878.	Croydon.....	48	37	77	A sudden and explosive outbreak traced to a milk supply, but no evidence of enteric fever at the source of supply.	Dr. C. W. Philpot, M. O. H. Annual report for 1878. Brit. Med. Jour., Vol. II, 1879, p. 675.
34	September, 1878.	Portsmouth.....	153	78	64	Farmer's children had typhoid fever and no doubt poisoned the well, for two children who were out walking and drank water from this well were subsequently attacked. Milk supplemented from another farm where well was within a few feet of cesspool of a common privy.	Dr. G. Turner, Brit. Med. Jour., Vol. II, 1879, p. 675.
35	September, 1878.	Colston, near Glasgow.	40	40	100	Infected clothing brought to dairy farm to be washed. On the fourteenth and fifteenth days later symptoms of enteric fever appeared in persons receiving milk from this farm; also a convalescing child brought to farm. Water supply on premises deficient; shallow dip well, but not used for drinking purposes.	Dr. J. Christie, Sanitary Record, Vol. IV, p. 342.

¹ Washington street epidemic.

² And 30 suspicious cases.

³ Pollock Shaw's road and Kingston epidemics.

⁴ A great number.

⁵ Several deaths.

⁶ There was also a supposed outbreak of milk typhoid at Bristol, 8 cases in 5 houses in spring of 1880. Their common milk supply was the only connection.

TABLE I.—*Epidemics of milk-Typhoid (Harts)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
36	October, 1878.	Perth	(1)				All the families in which the disease ap- peared had their milk from one dairy.	Brit. Med. Jour., Vol. II, 1878, p. 645.
37	December (Christmas), 1878.	Dublin			67	100	A probable case of typhoid at dairy, in November and middle of December. A strong wind blowing into the yard would certainly waft particles of cow manure, from the dining room, etc., to these minute portions of human excreta might have adhered. Nurses also connected with dairy farmer sick with typhoid fever.	Dr. C. A. Cameron, M. O. H. Dub- lin Jour. of Med. Sci., July, 1879, Pt. I.
38	November, 1878.	Huncoat	12		12	100	Children of dairy farmer sick with typhoid fever. Father would nurse the children and also attend to the cattle.	Dr. T. Dean, M. O. H. Sanitary Records, Vol. IV, p. 362.
39	February, 1879.	Chichester	50	6			Milking hovel near a stream which receives large quantities of filth. Milkman washed udders of cows with water from this stream, which probably at the time con- tained the specific poison. Privy pit only 8 yards from well, but no history of any recent typhoid at the farm.	Dr. Hubert Airy, Brit. Med. Jour., Vol. II, 1879, p. 475.
40	October, 1879.	Bristol	(1)				Milk traced to a suspected farm where there was no enteric fever, but water from pump in the dairy absolutely stunk when pumped, and was described as "simply poisonous."	Dr. Davies, M. O. H. Brit. Med. Jour., Vol. II, 1879, p. 625.
41	January, 1880.	Penzance	26	4	26	100	Three cases of typhoid at the farm. The same person who milked the cows and attended to washing of dairy utensils also nursed the patients.	Dr. G. B. Millett, M. O. H. Brit. Med. Jour., Vol. II, 1880, p. 37.
42	April, 1880.	Glasgow	508	69	373	73	Dairymen of the farm sickened with enteric fever in March. Subsequently some of the children took sick and lay in bedroom next the kitchen; also dairymaid was taken sick and occupied a room above milk and wash house. Soiled discharges from sick bed washed at dip well, probably also used for other domestic purposes.	Dr. J. B. Russell, M. O. H. Brit. Med. Jour., Vol. I, 1880, p. 985.
43	April, 1880.	Possilpark, Glasgow	92		90	97	(See above, No. 42.) Dairymen supplied milk shops in Possilpark also.	Dr. J. Christie, Brit. Med. Jour., Vol. I, 1880, p. 894.
44	July to September, 1880.	Millbrook, Cornwall	19		19	100	Six cases of typhoid fever within three weeks at milk seller's house; milk kept in a filthy apartment near a badly trapped and very	Dr. E. Ballard, Brit. Med. Jour., Vol. I, 1881, p. 20.

45	September, 1880.....	Rochdale.....	35	9	26	74	attended, Jan in bed, which drain contained infected excreta. In a cottage between the farmhouse and slipping road, the housewife had thrown her excreta into a cesspool, from which the dip of the soil inclines toward farm well. Cattle also waded about this cesspool. Milk probably diluted. Milkman's son had fever with typhoid sym- ptoms in a room upstairs, and dejecta had to be carried through the back kitchen, used also as dairy. Infection either caused by absorption or by the act of milking being performed by attendants on the sick boy.	Dr. Joseph Henry, M. O. H. Brit. Med. Jour., Vol. I, 1880, p. 597.
46	September and October, 1880.	Portsmouth, Cam- bridge Barracks.	7	.....	7	100	Convalescent from typhoid fever visited the dairyman's house, probably in September. The outbreak occurred in the early part of October. Dairy well close to manure pile; privies only 13 yards distant; water evi- dently largely contaminated by sewage. Nil. All cases occurred about the same date. Invaded houses not on the same side or street, nor adjacent. Five out of six households invaded had their milk from one dealer.	Surg. Maj. Jameson. Brit. Med. Jour., Vol. I, 1881, p. 61.
47	October, 1880.....	Bridlington.....	48	8	48	100	No typhoid fever at dairy, but well in close proximity and exposed to excremental pol- lution; water declared to be nothing but liquid sewage.	Dr. J. Allison, M. O. H. Brit. Med. Jour., Vol. II, 1880, p. 786.
48	October, 1880.....	Marylebone (Clifton Hill, etc.).	9	9	11	100	A case of enteric fever in the house; excreta thrown into a defective drain, which was near the well used for dairy purposes; dis- tinct evidence of seepage from this drain into well.	Dr. A. W. Blyth, M. O. H. Brit. Med. Jour., Vol. I, 1881, p. 61.
49	October, 1880.....	Southport.....	32	2	32	100		Dr. H. H. Vernon, M. O. H. Brit. Med. Jour., Vol. II, 1880, pp. 820-834.
50	October and November, 1880.	Worthing.....	44	8	44	100		Dr. C. Kelly, M. O. H. Brit. Med. Jour., Vol. II, 1880, p. 934.

1 Several cases.

TABLE I.—*Epidemics of milk—Typhoid (Busey and Kober).*

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
51	1868.....	Dover.....					Investigation convinced reporter that the milk was the vehicle of the poison and that it became infected by absorption and not through contaminated water.	Dr. M. K. Robinson. Trans. Int. Congress for Hygiene and Demogr., 7th sess., 1891, sec. 3, p. 170.
52	August 28 to September 3, 1872.	Bergen.....	18		All.....	100	Enteric fever at farm. Wife acted as nurse and distributed the milk. Explosive outbreak. All cases taken sick between August 28 and September 3.	Dr. Holmboe. Nork Mag. & Lægerk., 1873, p. 654; Hirsch Handbuch, Vol. I, p. 683.
53	Summer, 1875.....	Plon Holstein.....	(²)		All.....	100	Enteric fever at milk farm. Well highly polluted with refuse. Water used for cleaning milk utensils. No new cases after September 5, when customers stopped purchasing milk, except in one family, who continued to buy the milk.	Dr. Lübe. Allgem. Zeitschrift f. Epitem., 1876, Vol. II, p. 293.
54	November, 1878.....	Aberdeenshire.....	(²)				Piggery close to milk room; bad drain passed under the pump, whence the water for utensils washed from a well close to and under the level of the dunghill, and open to any sewage that might percolate in that direction.	F. A. McEwen. London Practic., 1881, XXVI, 161-164.
55	January, 1879.....	Aberdeenshire.....	15				Refers to several instances in which "milk had been liable to contamination either directly through persons suffering from the disease or indirectly through sewer emanations or water charged with the specific infective element of the disease for which the milk may also have acted as a cultivation fluid."	Do.
56	January, 1881.....		(²)				A fatal case of typhoid fever at dairy. Polluted well. All patients had used unboiled milk.	Dr. W. N. Thursfield. Sanitary Record, London, 1880-81, n. s., II, 243.
57	March, 1882.....	Leicester Infirmary.....	12	2	12	100	Nearly all cases occurred within one week in May, none since June 1, "and its area has been most distinctly marked out in relation to the milk supply."	W. Elgar Buck. Mid. Med. Misc., Leicester, 1883, II, p. 73.
58	May and June, 1882.....	Glasgow.....	59	6	50	85	Typhoid fever at dairy. Well only 50 feet higher up on the hill than the well.	Dr. J. B. Russell. M. O. H. Brit. Med. Jour., Vol. II, 1882, July 8.
59	June, 1882.....	Allegheny City, Pa.....	40	4			All cases taken sick within twenty-four hours; all supplied with one exception, with milk from same dairy; health officer unable to explain milk infection.	Dr. D. N. Rankin. Pittsburgh Med. Jour., 1883, III, 289-292.
60	June, 1882.....	Clapham.....	20		19	95		Brit. Med. Jour., 1882, Vol. II, p. 216.

61	July, 1882.	Halifax Stone Chair.	11	3	11	100	Two cases of probable typhoid at farm. Father of farmer's wife arrived July 11. Taken sick July 21; no medical aid. Died August 14. Unsanitary condition at farm; untrapped drain in room where milk was stored; polluted water.	Dr. Britton, Brit. Med. Jour., 1882, Vol. II, p. 749.
62	November, 1882.	Newton Heath.	60				Of the first 16 cases, 12 consumed milk from the same dairy; 2 obtained their milk from shops, and 2 from still other sources; no details, doubtful connection.	Henry Tomkins, and James Niven. London Lancet, 1883, Vol. I, pp. 360, 641.
63	July, 1883.	Göteborg.	4		4	100	Typhoid cases at milk farm and unsanitary conditions.	Dr. E. Almquist. Vrtjschr. f. Gesundheitspd., 1889, XXI, 327.
64	January, 1883.	Cologne.	270				The cases were distributed in 54 households, all situated in the best part of the city. Typhoid among servants at milk farm; polluted water used in cleaning utensils.	Dr. B. Auerbach. Deutsche med. Wochenschrift, Berlin, 1884, X, 709.
65	February, 1883.	Gateshead.	44	6	44	100	All in 30 households supplied with milk from a farm where enteric fever prevailed among the children; the mother nursed and also assisted in milking and dairy work. Utensils kept in a dirty scullery. Epidemic invaded 276 families, all using milk from a particular dairy farm where enteric fever started in a boy who arrived July 6, and sickened July 16.	Charles Green. London Lancet, 1883, Vol. II, 986.
66	July to October, 1883.	St. Pancras.	431	62			Disseminated by the sale of milk from a dairy kept by a man of whose family several members were sick with typhoid fever.	Shirley F. Murphy. London Lancet, Vol. II, p. 652.
67	October, 1883.	Dundee.	102				Typhoid fever case at dairy; a woman who assisted in nursing also helped to wash milk utensils.	Brit. Med. Jour., 1883, Vol. II, p. 839.
68	October and November, 1883.	Englewood, N. J.	10		10	100	Three cases of typhoid fever at milk farm in August and September. The bulk of epidemic cases occurred between October 24 and November 15, the sale of milk having been stopped November 4.	D. A. Baldwin. Med. Record, N. Y., 1883, XXIV, p. 585.
69	October and November, 1883.	Port Jervis, N. Y.	159	17	21	80	Daughter of the owner of the milk farm reported to have been ill with diarrhoea; water from an open ditch polluted with sewage and the dejecta of a previous case of typhoid fever, located above the farm, had been used for dairy purposes. Milk supply diluted.	Dr. A. P. MacDonald. N. Y. Med. Times, 1883-84, XI, p. 323.
70	December, 1883.	Aberdeen.	25	2	25	100	Typhoid at milk farm and bad, unsanitary conditions.	Dr. Simpson, M. O. H. London Lancet, Vol. I, 1884, p. 487.
71	January and February, 1884.	Upsala, Lakare Fortin.	42		42	100		Ernst Almquist, Vrtjschr. f. Gesundheitspd., 1889, XXI, 327.

² Several cases.

¹ Families.

TABLE I.—*Epidemics of milk—Typhoid (Busey and Kober)*—Continued.

No.	Date	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
72	May and June, 1884.....	St. Albans	131	23	.....	.....	Of 396 houses supplied with the suspected milk, 86, or 21.7 per cent, were infected. Some of the milk sent to London affected consumers there. Milk obtained from a farm where cases of typhoid had occurred. All due to milk sold while there was typhoid fever at cow keeper's house, for which he was fined 3 guineas.	Shirley F. Murphy. Report Medical officer local government board, 1884; Brit. Med. Jour., 1884, Vol. I, 1162, Vol. II, p. 1086.
73	October, 1884.....	Tweedmouth	23	.....	23	100	Traced to a particular milk farm where dairymaid took sick at the same time as the outbreak in Glasgow. Prior to this cattle had suffered from a febrile disease attributed to drinking sewage water; enteric fever endemic in adjacent villages; difficult to say whether infection originated with the cows or had been conveyed from another focus.	Sanitary Record, London, n. s., 1884-85, p. 204.
74	August and September, 1884.....	Beldiviere, Royal, and Western infirmaries, Glasgow.	143	32	.....	.....	Sudden outbreak among customers of a particular dairy, where 4 cases of typhoid fever had previously occurred. Well liable to gross pollution, being situated on the brink of a ditch which received the drainage from the farmhouse.	Dr. J. B. Russell, M. O. H. Brit. Med. Jour., 1884, II, 626, 724; Sanitary Journal, Glasgow, 1884-85, n. s., VIII, pp. 225-239.
75	October, 1884.....	Derby	40	.....	40	100	Infected well water at dairy	Brit. Med. Jour., 1884, Vol. II, p. 786.
76	November, 1884, to March, 1885.....	Groningen.....	58	.....	46	79	Numerous sources of contamination at the milk farm; well polluted.	Dr. Ali-Cohen, Nederl. Tijdschr. v. Geneesk., Amster., 1887, XXIII, 2d, pp. 78, 84.
77	December, 1884.....	Aberdeen.....	65	7	43	66	Sewage polluted well at dairy	Dr. Simpson. Brit. Med. Jour., Vol. I, 1885, p. 193.
78	February, 1886.....	Leichhardt, Australia.	38	5	.....	.....	This epidemic of typhoid fever at its commencement was associated with the use of milk from a dairy situated near a polluted brook, and no other water supply was on the premises.	J. Ashourton Thompson. Austr. Med. Gazette, Sidney, 1886-86, Vol. V, p. 265.
79	July, 1886.....	Swanage, Dorset.....	.....	.....	.....	.....	Outbreak originally traced to cream derived from a certain dairy, where no other evidence could be found than a liability of the well to pollution.	Mr. W. Harvey. Report medical officer local government board, 1886, No. 16, p. 294.
80	July, 1886.....	{ Lancing College Shoreham.....	14 80 to 100	2	14	100	.....	Dr. C. Kelly. London Practic., 1886, XXXVII, pp. 223-231.

81	October, 1886.....	Carlisle.....	20	24	59	Traced to a dairy where typhoid cases had existed, preceded by a febrile disorder among the cows; water supply and sanitation improved.	William Brown, Sanitary Record, London, 1887, 88, n. s., 1, n. pp. 10-15; Prætit., London, 1888, N. V. pp. 383-392.
82	November and December, 1886.....	Cambridge, Mass.....	73			The epidemic hit 35 families, and was traced to a certain milk farm, where a child was ill with typhoid fever; the father had entire charge of the nursing, emptied the excreta, and also prepared the milk for the market.	Charles Harrington, Boston Med. and Surg. Jour., 1888, CXXIX, pp. 49-52.
83	February, 1887.....	Göteborg.....	43	43	100	Affected 34 families, all supplied with a particular milk. Typhoid fever at milk farm, and suspicious sanitary conditions.	Dr. Ernst Almqvist, Vrdlschr. f. Gesundheitspf., 1889, XXI, pp. 327-338.
84	August, 1887.....	Göteborg.....	5	5	100	In 3 families; typhoid fever at farm.....	Deutsche med. Wochenschrft., 1889, vol. 15, p. 17.
85	.....	Denmark.....				Dr. Lehmann, of Copenhagen, before the International Congress of Hygiene and Demographic held at Wien, 1887, described 2 epidemics of typhoid fever traced to a certain creamery, and pointed out the difficulty of tracing infection when milk is received from a number of farms and mixed.	
86	March, 1888.....	Göteborg.....	4			Typhoid at milk farm, and bad, unsanitary surroundings.	Dr. Ernst Almqvist, Vrdlschr. f. Gesundheitspf., 1889, XXI, pp. 327-338.
87*	.....	Washington Heights, N. Y.....				Dr. Edson is quoted as having reported this epidemic of a disease resembling typhoid fever confined to the customers of a certain milkman. On careful inspection of the cows 1 of them was found to be suffering from a leathisome disease of the udder. The cow was being milked into the common pail. No other cause could be found, and the sickness speedily stopped when this cow was quarantined.	Brooklyn Med. Jour., 1888, Vol. I, p. 182.
88	July to December, 1888.....	Spennymoor, Durham.....	25	5		Outbreak occurred in 19 families, 11 of which were supplied with milk from a dairy where typhoid fever and evidence of polluted water were found.	Dr. David Page, Public Health, June, 1889; Lancet, London, 1888, Vol. II, p. 941.
89	1888.....	Evesham.....	6	1	83	Typhoid at dairy; milk adulterated with polluted water.	Dr. Fosbrooke, Public Health, February, 1889.
90	1889.....	Country town in New York.....	200, nearly.			Investigation showed that only the customers of a certain milkman were affected. His well was contaminated by the train of a neighbor's house in which typhoid had recently occurred. Water used to wash milk cans, and possibly also for adulteration.	Dr. Wm. M. Smith, quoted by Dr. Cyrus Edson, Med. Record, N. Y., XXXV, 1889, p. 10.

TABLE I.—*Epidemics of milk—Typhoid (Eusey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
91	1889.....	St. George, Hannover Parish.	.....	.....	.....	.....	Dr. Barry, medical inspector, reports to the local government board on this sudden and localized outbreak of enteric fever, which he attributed to temporary admixture of infected milk with the usual supply, and also refers to nuisance from sewer ventila- tors, etc.	Report Medical Officer local gov- ernment board, 1889, p. 47.
92	February to April, 1889.	Dundee.....	23.....	.....	23.....	100.....	All cases occurred among the customers of a particular dairy, and the most searching inquiries failed to find any trace of disease among the persons handling the milk or in the household, but 1 of the milk cows was suffering from a peculiar teat eruption, and as the disease declined upon stoppage of the milk, April 15, Dr. Ander- son feels justified to regard the "cow as an etiological factor. Other sanitary improve- ments were made in connection with sewer. Typhoid fever at milk farm; polluted water; air of the milk house liable to contamina- tion. The epidemic affected especially families supplied with milk which had been kept overnight in the milk house.	A. M. Anderson, Brit. Med. Jour., London, 1889, II, p. 465.
93	February, 1889.....	Stirling.....	40.....	4.....	40.....	100.....	Typhoid fever at milk farm; polluted water; air of the milk house liable to contamina- tion. The epidemic affected especially families supplied with milk which had been kept overnight in the milk house.	Dr. McFadyan. Brit. Med. Jour. London, 1889, Vol. I, p. 1250.
94	March, 1889.....	Strand district, Lon- don.	10.....	.....	10.....	100.....	Dr. Conway Evans, the medical officer of that district, reports that he has traced 10 cases of typhoid fever to the milk supply, and was ordered to visit the farm and take nec- essary steps.	Brit. Med. Jour., 1889, Vol. I, p. 725.
95	June, 1889.....	Svarteberg, Sweden ..	104.....	11.....	.....	.....	Typhoid-fever cases at milk farm; contami- nated water used for dairy purposes, also for adulteration of milk.	Ernst Almqvist. Zeitschrift für Hygiene, Leipzig, 1890, Vol. VIII, pp. 137-140.
96	July, 1889.....	Belgard.....	11.....	.....	11.....	100.....	All the 11 typhoid fever cases had obtained their milk from a poor woman, the owner of a single milch cow, whose child was ill with typhoid fever, the milk being kept in a safe in the sick room, it being the only room at their disposal.	E. Roth. Deutsche Vrijschr. f. öffentl. Gesundheitspd., 1890, XXII, pp. 238-246.
97	July, 1889.....	Leeds.....	120.....	(2).....	.....	.....	No details as to the condition of dairy farms given. Cases occurred in the best residen- tial part and were traced to a particular milk supply.	Dr. Goldie, M. O. H. Brit. Med. Jour., 1889, Vol. II, p. 110.

99§	November, 1889	York	120				Three cases of typhoid fever had occurred at the milk farm. Inspection revealed a probable source of infection well close to the privy; milk vessels kept there, and milk adulterated with 10 per cent of polluted water.	S. W. North, M. O. H., The Practitioner, London, 1889, XLIII, 393-400.
99§	January to May, 1890	Genève	63				The epidemic was traced to a particular dairy, where the most unsanitary conditions were found. Men were seen spitting on their hands while polishing milk cans. There was also evidence of reckless watering of the milk with polluted water.	Dr. Vincent. Épidémie typh. propagée par le lait, Genève, 1890, p. 15.
100	May, 1890	Forfar	36				Three cases of typhoid fever at the dairy from whence milk was supplied to 28 families. Milk exposed to the contamination of an infected drain.	Dr. Murray, M. O. H., Sanitary Journal, Glasgow, 1890-91; n. s. XIV, p. 113.
101	May, 1890	Nottingham	7	7		100	Nephew of milkman sick with walking typhoid fever; continued at work. Milk supply stopped June 20; after June 26 no fresh cases occurred.	Dr. Phillip Boobyer, M. O. H., Annual Report for 1890; Public Health, London, 1891 92, IV, p. 110.
102	June, 1890	Waterbury, Conn.	50	41		82	Typhoid-fever cases at the milk farm from which at least 41 of the cases had consumed milk. One of the farm hands continued to work in the care of cans and at milking for a week before giving up; he also defecated in the cow stables, throwing the stools into the barnyard and thus infecting material everywhere.	Dr. Herbert E. Smith, Sanitarian, N. Y., 1890, XXV, p. 298-308.
103§	July, 1890	Sittensen, Hannover.	103				This epidemic affected only persons who had drunk water from a specifically infected well or skimmed milk from a certain creamery supplied by 70 to 80 milk producers, and the evidence appears to indicate that this mixed milk supply was contaminated by the owner of the suspected well adulterating the milk; 8 cases occurred in the house with the suspected well and 78 cases among contributors of milk to the creamery, and who, of course, were the largest consumers of their skimmed milk.	Dr. Schröder. Zeitschrift. f. med. Beamte, Berlin, 1891, IV, pp. 227-262.
104;	July, 1890	Wyandotte, Mich.	11	2	11	100	All supplied with milk from a stall-fed cow which drank water from a well polluted with animal matter. Cases continued to occur as long as this milk was used, and disappeared upon its stoppage, except in 1 family, who returned to the milk, and this was followed by 2 more virulent cases in the family. Professor Vaughan examined the milk and water bacteriologically, and while failing to discover Eberth's germ, he found similar pathogenic germs in both media, in larger proportion in the cow's milk. § Several deaths.	Dr. E. P. Christian, Am. Lancet, Detroit, 1891, n. s., XV, pp. 121-128; Phys. and Surg., Detroit, 1892, XIV., pp. 337-343.

1 Or more.

TABLE I.—*Epidemics of milk—Typhoid (Eusey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
105	August, 1890.....	Lauchstädt.....	74	9	.....	.....	The first and greatest number of cases occurred at a watering resort, which was supplied both with water and milk from a farm where typhoid cases had occurred. These cases occurred in 89 households, and "the outbreak was clearly proved to be caused by contaminated milk." [We have been unable to refer to Dr. Thompson's original report.]	Dr. Penkert. <i>Zeitschrift für med. Beante</i> , Berlin, 1891, IV, p. 50.
106	August, 1890.....	Waversley, Rand- wick, Sidney.....	89	.....	.....	.....	A number of cases occurred, all pointing to a particular milk supply derived from a farm which was watered by a creek to which the cows had free access; an orchard on which infected night soil had been deposited drained into the creek higher up. No evidence given whether the milk had been adulterated with this polluted water, where the cans were washed, or whether udders were infected while cattle waded in the stream.	London Lancet, 1891, Vol. I, p. 223.
107	August, 1890.....	Toorak, Australia.....	.....	.....	.....	.....	The outbreak occurred in 41 families who derived their milk from a farm where a case of typhoid was found, and 2 others subsequently occurred there. Sanitary condition bad; milk cans filled in a tainted atmosphere; water supply found to be contaminated by sewage and liable to gross pollution. Milk supply was stopped until a better water supply had been provided, after which no more cases occurred.	Austral. Med. Jour., 1890, n. s., XII, p. 422.
108	September and October, 1890.....	Edinburgh.....	63	3	.....	.....	Dr. Harvey Littlejohn. Edinburgh Med. Jour., 1890-91, XXXVI, Part II, pp. 801-814; Brit. Med. Jour., 1890, Vol. II, p. 1318.	
109	1891.....	United States.....	2	.....	.....	.....	Dr. Brady describes 2 cases of typhoid fever which he attributed to infected milk, and considers it perfectly conceivable when we recall the sanitary condition of the average milk farm, and the dairyboy with bespattered boots, dirty hands and shirt, etc.	Dr. E. J. Brady. Cincinnati Lancet and Clinic, 1892, n. s., 28, p. 20.
110	1891.....	Decatur, Ill.....	5	.....	5	100	Typhoid fever at dairy conveyed by digital infection, as dairy hands also assisted in nursing the typhoid patients.	Dr. E. J. Brown. Trans. Ill. Med. Society, Chicago, 1891, XLI, pp. 145-148.

111	February, 1891.	A vantage.	12	12	100	Two cases of typhoid fever at dairy. Milk- ing and milking also assisted in in- gredients. Water supply and owner in the habit of diluting the milk. All these cases received the milk from 1 cow which had no access to pure water, but drank from a nearly dried-up swamp on the island. (No bacteriological exami- nation of the water.)
112	June, 1891	Grosse Isle, Mich.	8	1	100	Mild case of typhoid at the farm in August. Dung pit located near by received the ty- phoid excreta; the water supply contami- nated from this dung pit; other unsanitary surroundings.
113	August, 1891.	Shawland, Glasgow.	42	4	89	A case of typhoid fever at the dairy farm, attributed to a contaminated well which received drainage from a cistern. (?) A fatal case of typhoid occurred at the milk farm twenty days before the present out- break. The parents continued their dairy work while nursing their sick child.
114	October, 1891	Borough of Nanti- coke, Pa.	42	.....	74	After a painstaking investigation, traced to a particular milk farm, where cases of typhoid fever had occurred ever since last spring. Well liable to infection from dejecta of patients. Milk contaminated by placing cans in the well for the avowed purpose of keeping the milk cool.
115	Spring, 1892.	Plymouth, England.	12	1	100	Epidemic traced to a particular milk supply. The son of this milkman handled and delivered the milk while suffering from a mild attack of typhoid fever, which had remained unrecognized until the investi- gation disclosed exact facts.
116	August, 1892	Springfield, Mass.	150	25	67	This epidemic was limited to consumers of ice cream manufactured by Italian vendors. Investigation revealed the existence of several cases of enteric fever in ice-cream shops, and much reason for believing that the ice cream was prepared in dangerous proximity to the patients farm.
117	August 20 to September 10, 1892.	Somerville, Mass.	35	.....	86	A young gentleman took sick with enteric fever while visiting a neighboring clus- ter. He had been supplied with milk from this farm, and his female servants who carried the milk were taken sick like- wise.
118	September 14 to October 15, 1892.	Greenwich, Rother- hithe.	61	.....	91	
119	1893.	Altenmuh.	(1)	.....	

1 Several cases.

Dr. E. W. Mitchell. Cincinnati
Laurel and Clinde, 1892, n. s., 28,
p. 647.Dr. E. P. Christian. Phys., and
Surg., Detroit and Ann Arbor,
1892, XIV, 337-343.Dr. A. M. Campbell. Public
Health, 1891-92, Vol. IV, p. 275.Dr. L. H. Taylor. Annales Hy-
giene, Philadelphia, 1892, Vol.
VII, p. 333-403.Dr. F. M. Williams, M. O. H. Brit.
Med. Jour., 1892, Vol. I, p. 1157.Drs. Sedgwick and Chapin. Boston
Med. and Surg. Jour., CXXIX,
20, p. 435, 1893.Dr. W. T. Chapin. Boston Med.
and Surg. Jour., CXXIX, 20,
1893, p. 435.Dr. George Turner. Practit., Lon-
don, 1892, XLIX, p. 141-160.Dr. Franz Spaet. Arch. für Hy-
giene, München and Leipzig,
1893, XVII, p. 306.

TABLE I.—*Epidemics of milk-Typhoid (Dusey and Kober)*—Continued.

No.	Date.	Place.	Number of cases.	Number of deaths.	Number of cases among milk consumers.	Percent.	Circumstances of outbreak.	Reporter and reference.
120	1893.....	Bandon.....	(1)	.....	.....	.....	In this instance Dr. Welply traced the infection to a creamery which collected milk from a number of farms, at one of which a few cases of enteric fever occurred, infection originally carried from Cork. The milk at these creameries is separated, the cream made into butter, and the skimmed milk returned to farmer, thus causing intimate relationship, and the disease may easily become widespread among the users of the milk.	Dr. Welply. Brit. Med. Jour., 1893, Vol. II, p. 698; London Lancet, 1894, Vol. II, p. 1085.
121 (1)	February, 1893.....	University of Virginia.....	14	.....	14	100	These cases of atypical typhoid fever occurred among the students of the university, all boarding at the same hotel and consuming a particular milk supply from a dairy which is located on the banks of a creek which receives the sewage from one of the main university sewers. An ignorant negro, who lives 1 mile above the dairy, had typhoid fever during the preceding fall, and his dejecta was thrown on the ground without disinfection. The milkman used creek water to wash the udder of the cows.	Dr. Wm. C. Dabney. Med. News, Philadelphia, 1893, LXIII, 630-632.
122 (1)	May, 1893.....	Oakland, Cal.....	362	.....	228	70	These cases occurred within one month, and as 70 per cent were consumers of milk from one particular dairy, a sanitary inspection was made and revealed the following facts: A typhoid-fever house in close proximity; dejecta thrown on the ground close to a small dam in the creek, from which a pipe supplied a large tank 75 feet below with water for dairy purposes; moreover, this polluted water also flowed through the cow pasture.	Dr. S. M. Mouser. Occident. Med. Times, Sacramento, 1893, VII, pp. 503-504.
123 (2)	July, 1893.....	Paisley, Renfrewshire.....	86	.....	86	100	This epidemic was traced to the consumption of ice cream made at the premises of a vendor where an unreported case of typhoid fever was found, and this patient had remained in contact with the business during most of her illness.	Dr. Campbell Munro. Brit. Med. Jour., 1894, Vol. II, p. 829.

124	August, 1893.....	Rosstock.....	(1)	15	1	15	100	<p>All traced to milk from a suburban dairy found in a most unsanitary condition; no privy, but a highly polluted well, which was used for washing the utensils and vessels for sterilization.</p> <p>This limited outbreak was intimately connected with a certain milk farm, the owner of which was obliged to use a neighbor's well, in whose family typhoid fever had occurred during the summer of 1892; three weeks after using this well the first case occurred at the milk farm, and shortly afterwards the owner of the well was also taken sick. This resulted in a cleaning of the well, which was found to be contaminated with a very foul sediment, a dead chicken, and other organic refuse. The season being unusually dry, and the ground water being low, had resulted in concentration of the impurities, and as this well had been used for dairy purposes, it was doubtless the source of infection.</p> <p>In a very extensive epidemic of enteric fever a large share in spreading the fever was due to a particular dairy, where cases of typhoid fever existed and the wife who managed the milk business also nursed the sick children. There was, moreover, a direct connection between the sewer and the room in which the milk and utensils were kept.</p> <p>A serious outbreak was traced to a creamery receiving among others the milk from a farm where enteric fever had occurred, and which was handled by a person who also assisted in nursing those suffering from the disease. The cream had been separated and the skim distributed in due proportions among the different farms.</p> <p>Traced to a common milk supply; no evidence of typhoid fever at the milk farm, although the disease had prevailed in the vicinity; very unsanitary conditions, such as liquid and semiliquid filth surrounding 36 cows. The epidemic speedily subsided after stoppage of the milk supply from this dairy.</p>
125	July, 1893.....	Vicinity of Bethesda, Montgomery County, Md.						
126	July to September, 1893.	Shildon, Durham Co..						<p>Dr. Bruce R. Low. Report to the local government board on an outbreak of enteric fever at Shildon, London, April 23, 1894.</p>
127	1894.....	Castle Island, Ireland.						<p>Brit. Med. Jour., 1894, Vol. I, p. 815.</p>
128	January and February, 1894.	Richmond Hill, Surrey County.	55	52	94			<p>Drs. Rowland and Seaton. Brit. Med. Jour., 1894, Vol. I, p. 1325.</p>

¹ Several cases.

Dr. Lesenberg, city physician, quoted by Dr. Dornblüth, Jahrbuch f. Kinder Krankheiten, 1893, XXXVI, p. 181.

Unpublished memoranda furnished by our friend Dr. George Lloyd Nagrunder, of Washington, D. C., and Dr. W. F. Elgin, of Montgomery County, Md.

TABLE I.—*Epidemics of milk—Typhoid (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
129	March and April, 1894...	South Lambeth.....	59	10	55	93	Traced to a particular milk depot, affording no other evidence except unclean methods and a water supply subject to pollution from the yard drain. The water tank, on being emptied, contained a deposit of 4 inches of offensive matter; no bacteriological examination.	Brit. Med. Jour., 1894, Vol. I, p. 1146.
130	March, 1894.....	Montclair, N. J.....	107	14	.....	.....	Of 44 families supplied with milk from a particular dairy, typhoid fever occurred in 28, or 63.6 per cent. Of 29 cases reported from Bloomfield and Glenridge, 18 were traced to the same dairy, where a case of typhoid occurred February 11, but the sale of milk was not stopped until March 28 and epidemic checked promptly after that date. Unusual sanitary condition at dairy and polluted feed for cows.	Dr. R. C. Newton. Med. Record, N. Y., 1894, XLV, pp. 713-715.
131	May, 1894.....	Brixton.....	60	10	.....	.....	This epidemic was traced to a milk farm where the cows were partially fed on fresh grass cut from the fields of a sewage farm; it was also shown that water from a brook running through the same land, and presumably contaminated, had been used to adulterate the milk.	Dr. Verdon, M. O. H. Brit. Med. Jour., 1894, Vol. I, p. 1112.
132	August, 1894.....	Montclair, N. J.....	19	1	.....	.....	Fourteen of these cases found in close proximity to a bakery where ice cream was sold and made in a very filthy place. A case of typhoid had occurred at this bakery, and persons who made the ice cream also assisted in nursing. Of 10 cases, 8 had used ice cream or milk from this bakery, and the disease was promptly checked upon closing the bakery.	Dr. Thomas Horton. Med. Rec., N. Y., 1894, XLVI, p. 651.
133 (#)	July, 1894.....	Bayhead, N. J.....	15	.....	15	100	This limited outbreak was confined to consumers of a milk dealer who derived his supply from three dairies, at one of which a young man was taken sick July 1, with what proved to be a case of typhoid fever, and continued to milk his cows daily until July 11. The first case of typhoid fever among consumers of the milk occurred July 14, and the last case nineteen days after this patient stopped milking. How	Dr. W. H. Katzenbach. N. Y. Med. Record, 1895, vol. 47, p. 165.

TABLE I.—*Epidemics of milk—Typhoid (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
137	April and May, 1895.....	New Milford, Conn.....	23	.....	.....	.....	The daily papers contain accounts of an epidemic of typhoid fever which is prevailing in New Milford. The disease is said to have been distributed by milk obtained from a certain farm in the neighborhood. Up to May 9, 23 cases had been reported. (Details wanting.)	Med. Record, N. Y., vol. 47, p. 627.
138	June 22, 1895.....	Woolwich.....	19	.....	.....	.....	In 10 of these cases the milk was supplied from the same dairy, and the others from various sources. In 4 cases the milk supply was from the Punnett dairy, where the epidemic first broke out. This dairy has been closed by the authorities.	Brit. Med. Jour., Vol. I, 1895, p. 1423.

TABLE II.—*Epidemics of milk—Scarlatina (Harts)*.

1 st	June, 1867.....	Penrith.....	111	3	111	100	Scarlet fever at milkman's house. Cows milked by nurses. Milk kept in the back kitchen of the cottage.	Dr. M. W. Taylor. Brit. Med. Jour., Vol. II, 1870, p. 624.
2 nd	June and July, 1867.....	St. Andrews.....	26	2	26	100	Milk boy had sore throat and peeling off of the skin while carrying milk. Other cases at farmer's house. Wife nursed, and milked the cows.	Prof. O. H. Bell. Brit. Med. Jour. Vol. II, 1870, p. 489.
3	1872.....	.....	21	.....	21	100	Twenty-one children in a particular locality attacked within a fortnight, supplied with milk from a house where several children were ill of scarlatina.	Dr. M. K. Robinson, M. O. H. Annual Report of Medical Officer of Health, 1872.
4	June, 1875.....	South Kensington.....	19	.....	19	100	This epidemic affected a number of guests and servants of a house who had partaken of cream in one form or other on June 9, 1875. First cases occurred between June 11 and 14. Mode of transmission unexplained.	Dr. Geo. Buchanan. Report of Medical Officer of local government board, No. VII, 1876, p. 72.
5	July, 1876.....	Handsworth.....	37	4	37	100	Scarlet fever at dairy in the middle of June. Some of the milk and pans kept in the house; the dairy room communicated directly by a doorway with one of the living rooms.	Dr. J. B. Welch, M. O. H. Brit. Med. Jour., Vol. II, 1876, p. 225.

6 April and May, 1877.	New Barnet.	140	131	93	
7 [†] June, 1878	High Ashurst and Headley.	20	2		The epidemic burst upon the district very suddenly, 124 cases occurring between April 22 and May 4, in addition to the scarlet fever cases that they had contracted from the epidemic must be regarded as an accident. First cases in the children of a woman who nursed in the patients and milked the cows, though he did not himself have the fever and the milk was not taken into his cottage.
8 May and June, 1879.	Westgate, Newcastle-on-Tyne.	23	10		This very malignant epidemic was traced to a particular dairy, where no scarlet fever existed although prevalent in close proximity. The surroundings favored directly or indirectly the contamination of the milk with organic matter which frequently smelled offensively.
9 [†] August, 1879.	Fallowfield, near Manchester.	35	35	100	Twenty-four of the cases occurred within a space of thirty-six hours; no scarlet fever at farm or dairy and no disease among the cows. One of the milkers lodged, however, where his grandchild was lying in the full height of desquamation after scarlet fever.
10 July and September, 1880.	Paddington and Bayswater.	184			Scarlet fever at milk farm among the children of the milkers; there were two distinct outbreaks, one at the end of July, the other at the end of September.
11 October, 1880.	Dundee.				No case at farm, but female servant visited a house and contracted the disease, which was communicated to a person connected with another dairy.
12 November, 1880, and January, 1881.	Ilkley, Yorkshire.	{ 10 9 }	{ 10 8 }	{ 100 88 }	Infection probably conveyed from a fever house visited by the dairyman, who was in the habit of taking his milk can into the houses.
13 [†] January, 1881.	Bromley (Kent)				This sudden outbreak affected 18 families, supplied from a particular dairy, where one of the employees continued at work while 4 of his family had scarlet fever at home.
14 [†] January, 1881.	Halifax.	510	86		The farmer's man who milked the cows and brought the milk to the customers in Halifax had 4 children ill of scarlet fever, and probably helped to nurse them.
15 April, 1881.	Kewick.	(1)	(1)	(1)	The dairy adjoined a house where scarlet fever had existed for several weeks. Cows milked into an open tin can, which was carried across an open yard past the affected house, 30 to 40 families being affected.
					Families.

Dr. C. E. Saunders, M. O. H. Sanitary Record, Vol. VII, 1877, p. 69.

Dr. E. L. Jacob, M. O. H. Brit. Med. Jour., Vol. I, 1880, p. 139.

Dr. H. E. Armstrong, M. O. H. Brit. Med. Jour., Vol. II, 1880, p. 671.

Dr. H. Airy. Brit. Med. Jour., Vol. I, 1880, p. 107.

Dr. J. Stevenson, M. O. H. Brit. Med. Jour., Vol. II, 1880, pp. 596-632.

Brit. Med. Jour., Vol. II, 1880, p. 790.

Dr. T. Scott. Brit. Med. Jour., Vol. I, 1881, p. 604.

Dr. C. O. Baylis, M. O. H. Brit. Med. Jour., Vol. I, 1881, p. 314.

Drs. Ainley and E. Ballard. Brit. Med. Jour., Vol. I, 1881, p. 255; Vol. II, 1881, p. 485.

Dr. J. Robertson, M. O. H.

TABLE II. — *Epidemics of milk—Scarlatina (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
16	January, 1882	Greenock	20	—	20	100	All traced, between January 19 and February 1, to a milk supply derived from a farmhouse where 4 children were sick with scarlet fever. The milk supply was at once stopped.	Dr. Wallace. Brit. Med. Jour., 1882, Vol. III, p. 437.
17*	January 14-30, 1882	Charing Cross.	13	—	—	—	One of the dairy hands in London first showed symptoms of sore throat January 14th, and on the following day one of his children developed scarlatinal rash. There was no scarlet fever at this farm or for miles around, but Dr. Klein ascertained that a cow calved about the early part of January, and on February 1, date of his investigation, he noted that she had here and there lost portions of her coat and that her buttocks and posterior udder were foul and stained by excremental matter, and concluded that he had to deal very likely with puerperal scarlatinal infection from the cow, as puerperal fever in women was not infrequently due to scarlatinal infection.	Dr. W. H. Power. Report Medical Officer local government board, 1882, No. XII, pp. 63-71.
18*	January 14, 1882	Camberwell.	39	—	32	82	Milk supplied from above dairy	Do.
19*	January, 1882	St. Giles, St. Pancras, Marylebone.	32	—	32	100	.....do	Do.
20	January, 1882	Bloomsbury	—	—	—	—	Outbreak connected with a particular milk supply.	Mr. W. H. Power, quoted by Prof. A. M. Davies. Prov. Med. Jour., Leicester, 1889, Vol. VIII, p. 387.
21	February and March, 1882.	Oxford	29	—	29	100	This epidemic was traced to a particular milk supply, and the cases really consisted of 19 of scarlet fever, 18 of sore throat, and 1 of diphtheria. Investigation showed that a case of scarlet fever occurred at dairy February 27, and that this case had been preceded by a case of diphtheria next door to the dairy.	Dr. S. D. Darbishire. St. Barth. Hosp. Reports, XX, 1884, pp. 92-100.
22*	October and November, 1882.	Greenock	47	—	12	25	The first case occurred in the person of a milk dealer who took sick with what he considered an ordinary cold on October 6. One of his children became affected about eight days after; no medical man was called in to see these first cases.	Dr. Wallace, M. O. H. Brit. Med. Jour., 1882, Vol. II, p. 1325.

23	July, 1892.	Sunderland	Mr. Harris accidentally discovered the existence of scarlet fever in a dairy, and traced the disease to the source. In some houses dairies from the disease had occurred, it was shown that in four such instances the people had been supplied with milk from the infected source. Mr. Harris was unable to discover how many nonfatal cases owed their origin to this source.						Brit. Med. Jour., 1882, Vol. II, p. 109.
24	April, 1883.	Wolborough	Scarlet fever at milk seller's house. Of 16 families attacked, 9 were supplied with the suspected milk.	17	5	17	100		Brit. Med. Jour., 1883, Vol. I, April 21, 1883.
25	October, 1883.	Dundee	Epidemic traced to a farm where there was a boy sick with scarlet fever, and his nurses also milked and handled the milk in question.						Lancet, London, 1883, Vol. II, p. 699; Brit. Med. Jour., 1883, Vol. II, p. 839.
26	August, 1884.	do	A large number traced to a milk farm where one of the boys employed suffered from the disease but continued at work. Milk supply stopped and epidemic checked.						Brit. Med. Jour., 1884, Vol. II, p. 433.
27	October, 1884.	Greenock	An extended outbreak invading some 30 families mostly supplied from one source. The sanitary conditions at dairy warranted the stoppage of the milk.						Brit. Med. Jour., 1884, Vol. II, p. 924.
28	January, 1885	Paisley	Scarlet fever is reported as exceedingly prevalent in one district of the town. Milk taken from a dairy where one of the children was suffering from the disease. Directly traced to a milk farm where scarlet fever prevailed and convalescents assisted in milking.			8	100		Brit. Med. Jour., 1885, Vol. I, p. 41.
29	May and June, 1885.	Rosstock	This epidemic is believed to have been directly contracted from a peculiar disease affecting the cows, and which Dr. Klein believed to be identical with human scarlatina and he isolated a micrococci. (Hendon disease.)						Dr. T. Dornblüth. Jahrbuch f. Kinderkrankheiten, Leipzig, 1893, XXXVI, p. 174-191.
30	November and December, 1885.	Marylebone and St. Pancras.	All patients had consumed milk from the Hendon dairy. Persons who drank only boiled milk were spared.						Dr. A. W. Blyth. Brit. Med. Jour., 1886, Vol. I, 223. W. H. Power, Report Medical Officer local government board, 1885, pp. 73-84.
31	December, 1885	Dorset Square	A limited group of cases supposed to have been due to the consumption of condensed milk in which Klein found an organism, which he considered characteristic.	60		60	100		Dr. A. W. Blyth. Brit. Med. Jour., 1886, Vol. I, p. 223.
32	1886	St. George, Hanover Square.	Several cases traced to a particular milk supply and believed to be due to disease in the cow.						Dr. Corfield. Brit. Med. Jour., Vol. II, September 22.
33	June, 1886	Liverpool							Dr. J. M. Howie. Brit. Med. Jour., 1886, Vol. I, p. 1231.

TABLE II.—*Epidemics of milk—Scarlatina (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
34*	December, 1886, and January, 1887.	South Wimbledon and Merton.	635	4	577	91	The outbreak was explosive and affected as many as 119 patients one day, mostly all consumers of a particular milk supply; 29 cases occurred among patients supplied from a different dairy, but the cows had been in contact with those supplying dairy No. 1. Attributed to a communicable disease of the udder.	Dr. C. H. Cooper. Trans. Epid. Soc., London, 1888-89 n. s., VII, 38-47. W. H. Power. Report Medical Officer local government board, 1886, pp. 327-333; Sanitary Record, London, 1888-89, X, 422-426.
35*	April 5-16, 1887	Toxteth Park, Liver- pool.					This outbreak was traced to the milk supply of a certain dairy, but investigation failed to reveal the presence of human scarlet fever or contamination from that source, and no explanation except that a cow had calved there about April 1. Dr. Steeves also reported that cases of diphtheria appeared about the same time and localities as scarlet fever.	Dr. G. W. Steeves. Brit. Med. Jour., 1888, Vol. II, p. 911.
36	August and September, 1887.	Dundee	{ 783 813 }	{ 20 }			The Medical Officer reported to the sanitary committee of the Dundee police commission the outbreak of scarlet fever in connection with a number of dairy premises in the parish of Murroes, from which milk was sent into Dundee.	Brit. Med. Jour., 1887, Vol. II, pp. 733-736.
37	November, 1887	Hyde Park, Chicago					Scarlet fever appeared among the children of four families supplied by a milkman whose child was sick with "acute inflammation of the kidneys;" no scarlet fever card had been posted on the house, nor did the milkman cease delivering milk.	Sanitary Record, London, 1887-88, n. s., Vol. LX, p. 478.
38*	December, 1887	Great Britain	5		5	100	Traced to a milk supply derived from a diseased cow whose milk was of grayish color, and later the animal's skin desquamated freely.	Dr. H. Mallins. London Lancet, 1888, Vol. I, p. 119.
39*	December, 1887	Cannes	(1)				Traced to a dairy where all the cows were suffering from a diseased condition of the udders; they saw no ulceration, but the teats were covered with large scabs, and the dairymen stated that the scabs had been preceded by a vesiculo-pustular eruption, which broke while milking. The	Dr. H. Blanc. Lancet, London, 1888, Vol. I, p. 545.

40*	January and February, 1888.	Ipsomond, Newcastle ..	19	19	100	outbreak, was limited to consumers of milk from the cows. (No sores on the hands of milkers.)
41*	March 15 to April, 1888.	Garnethill, Glasgow ..	96	96	100	Traced to a milk farm where scarlet fever had occurred several months previously, and the cows presented evidences of having been recently sick, such as denuded hair, etc.
42 (#)	June, 1888.	Pollakshiels, Glasgow ..	70			Traced to consumers of a particular milk supply; no scarlet-fever cases at dairy or milk farm to account for outbreak. One of the cows was found thin and mangy looking, casting hair generally; several sores on teats covered with bloody scabs. A calf fed on this milk seized with a high fever which nearly killed it, but from which it is now recovering, with loss of hair and copious casting of the skin.
43	July 2-14, 1888	Ipsomond, Newcastle ..	116			Traced to a particular milk farm where scarlet fever prevailed. A milkmaid was one of the victims, and while sick continued at work.
44	August, 1888	Newcastle ..	74	61	67	These cases occurred in 63 families supplied by the same dairyman, and all took sick within a week with scarlet fever, sore throat, etc. Three of the children at milk farm exhibited certain symptoms of edema of the throat, tonsils, and fauces, but no signs of desquamation.
45	September and October, 1888.	Garnethill (Park epidemic, Glasgow).	56			Milk delivered from a farm where there was throat disease in the family of one of the dairy helpers; there were also 5 out of 24 cases of diphtheria among drinkers of the same milk.
46	October, 1888.	Spennymoor, Durham County.	83	15		Traced to a particular milk supply distributed from a shop where cases of scarlet fever and sore throat were found.
47	October, 1888.	Greenock ..	55			Attributed to a contaminated milk supply (doubtful evidence).
48	December, 1888.	Govan ..	37	35	94	The majority of cases occurred among the well-to-do customers of a particular milk seller, who evidently had an infected dairy and quite innocently sent out the infected milk.
						Of 74 families supplied with the suspected milk the disease appeared in 23 families and furnished 35 cases, while there were only 2 cases among 603 families supplied from other dairies. Origin not determined.

1 Several cases.

Dr. H. E. Armstrong. Public Health, May and October, 1888.

Dr. J. B. Russell, M. O. H. Sanitary Journal, Glasgow, 1888-89, n. s., XII, pp. 70-74.

Dr. Carmichael. Brit. Med. Jour., 1888, Vol. II, p. 32; Lancet, London, 1888, Vol. II, p. 179.

Dr. H. E. Armstrong. Sanitary Record, London, 1888-89, n. s., X, p. 64.

Dr. H. E. Armstrong. Public Health, September, 1888; quoted by Dr. A. M. Davies. *ibid.*

Dr. J. B. Russell. Sanitary Journal, Glasgow, 1888-89, n. s., XII, pp. 268-272; Lancet, London, 1888, Vol. II, 1079.

Dr. David Page. Report to local government board, London, 1889, p. 9.

Brit. Med. Jour., 1888, Vol. II, p. 956.

Sanitary Record, February, 1889.

TABLE II.—*Epidemics of milk—Scarlatina (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
49	December, 1888.....	Droex and Paisley road.	35	.....	35	100	Traced to a milk shop where there was a case of scarlet fever in the son of the keeper, whose family occupied the back kitchen. Shop promptly closed. A considerable number of cases have occurred within pistol shot of one another and attributed to infected milk.	Dr. Geo. McKay. Sanitary Journal, 1888-89, XII, p. 341.
50	January, 1889.....	Hillhead and Patrick, Glasgow.	.....	.....	.....	.....		Brit. Med. Jour., 1889, Vol. I, 34.
51*	February, 1889.....	Macclesfield {Upton.....	47 10	.....	47 10	100 100	All traced to a particular milk supply believed to be infected by a diseased cow among the dairy stock. Milk derived from a dairy where 2 cases of scarlet fever had occurred.	Dr. H. F. Parsons. Report Medical Officer local government board, 1889 pp. 89-114. Dr. J. C. McVail. Sanitary Journal, Glasgow, 1890-91, n. s., XIV, p. 73-75.
52	October, 1889.....	Kilmarnock.....	12	.....	.....	.....		Dr. L. W. Miller. Med. Record, N. Y., 1890, XXXVII, p. 587.
53	March, 1890.....	Brewster, Putnam County, N. Y.	24	.....	24	100	The daughter of a dairyman was taken with scarlet fever the day after her arrival in New York City. Two weeks after recovery she returned home; two weeks later her youngest sister, who slept with her, presented evidence of the disease, followed three weeks later by a number of cases in the village. The milkman had washed and wiped his cans with white flannel cloths left in the barn by a peddler of rags, which were probably the cause of first infection.	
54*	June, 1890.....	Crosby, Liverpool.....	30	.....	30	100	An explosive outbreak traced to a milk farm where there was no other evidence except a sick milk cow, pronounced by the veterinarian to be suffering from "bovine tuberculosis." In this epidemic of scarlet fever a large number of adults were attacked in proportion to children. Adults partook of the poison in the form of cream in tea, which seems in certain cases to increase the virulence of the poison. These cases were all traced to two milk rounds and two dairy farms, located in a fever district, and infection possibly conveyed by workmen who lived in infected localities. No scarlet fever at farms.	Mr. Limrick, M. O. H. Lancet, London, 1890, Vol. I, p. 1315.
55	January, 1891.....	Edinburg.....	.....	.....	.....	.....		Dr. Harvey Littlejohn. Lancet, London, 1891, Vol. I, p. 109.
56	January, 1891.....	Bristol.....	250	15	.....	34		Dr. S. S. Davies, M. O. H. Public Health, 1891-92, vol. 4, p. 362.

574 1891

England

58* February, 1891

Cardworth

5

59* March, 1891

Manor Hill and Clifton road, Sutton, Coldfield.

40

5

30

75

60* October, 1891

Whitchurch

(1)

61* November, 1891

Bushhill Park

33

33

100

62* March and April, 1892

Charlton, SE. London.

57

63* March and April, 1892

Upper Clapton

145

64 April, 1892

Handsworth

143

1

62

65 May and June, 1892

Aston Manor

97

62

64

66* August, 1892

Glasgow

224

A limited outbreak of scarlet fever, which to myself and two other medical men appeared to be due to milk. Preceding the outbreak, several of the cows at the suspected dairy had had an eruption on the udder, but almost by accident I discovered that a boy not residing at the dairy and who had casually been employed to milk had, just previous to the outbreak and when milking, suffered from a slight sore throat.* *

Traced to a particular milk derived from a farm where one of the dairy hands was convalescing from scarlet fever.

Traced to a milk farm with no other evidence except sickness among dairy stock, indications of recent ulceration on the teats, and progressive emaciation. Milk supply stopped and, with exception of one or two sporadic cases, no further cases arose in that part of the borough.

This outbreak was traced to a dairy where a case of scarlet fever had occurred and, as convalescent, was prematurely permitted to handle milk and utensils.

This sudden outbreak was traced to a common milk supply; no evidence of human infection, but cows suffered from an eruption on udder.

Epidemic traced to a common milk supply from a farm at which no trace of infection could be found, except scabs and excoriations of the udder and teats among cows.

Outbreak connected with a particular milk supply traced to a dairy where the child of one of the employees had scarlet fever. Traced to a certain milk supply, but contamination of the milk not explained, unless due to a mild cow infection or to a polluted water supply.

Connected with a certain milk supply, but infection not explained, unless of a bovine origin.

This epidemic affected members of 94 families who obtained their milk from a certain farm where there was no evidence of scarlet fever, but an epidemic teat eruption among the milch cows.

¹ Several cases.

Dr. W. N. Thursfield. Public Health, 1891-92, Vol. 4, p. 133.

Dr. B. Hill. Public Health, London, 1890-91, Vol. III, p. 487.

Dr. B. Hill. Public Health, London, 1890-91, Vol. III, pp. 487-491; Brit. Med. Jour., 1891, Vol. II, p. 136.

Dr. Pritchard. Brit. Med. Jour., 1891, Vol. II, p. 1179.

Dr. S. M. Copeman. Report Medical Officer local government board, 1891-92, XXI, pp. 69-78.

Dr. Hamer. Public Health, 1891-92, Vol. 4, p. 366.

Dr. J. King Warry. Practitioner, London, 1892, XLIX, pp. 63-73.

Dr. J. B. Welch. Public Health, London, 1892-93, V, 76-78.

Dr. Henry May. Public Health, London, 1892-93, Vol. V, p. 79.

Drs. J. B. Russell and Arch. K. Chalmers. Glasgow Med. Jour., 1893, XXXIX, pp. 1-22.

TABLE II.—*Epidemics of milk—Scarlatina (Bucey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
67	September, 1892	Leyton, Essex					Most of the cases confined to customers of a certain milkman, who derived his supply from a farm where scarlet fever prevailed.	London Lancet, 1892, Vol. II, p. 733.
68	November, 1893	Hastings					This limited epidemic invaded 26 houses, 18 of which had been supplied with the same milk. No scarlet fever at milk farm, but the cattle "were found to be all more or less suffering from febrile disturbance."	Dr. Scaryn Wilson. Brit. Med. Jour., 1894, Vol. I, p. 815.
69	December, 1893	Glasgow	30		28	93	This epidemic was traced to the milk from two dairy farms. At one of these a boy simply suffered from sore throat early in December, which induced scarlet fever in others. At the other farm some of the dairy employees developed scarlet fever and had kept at work for one or more days after illness.	Dr. A. K. Chalmers. Brit. Med. Jour., 1894, Vol. I, p. 426; Glasgow Med. Jour., 1894, XLI, pp. 117-127.
70	March, 1894	Blackheath	89	1			The epidemic invaded families served by the same milk dealer. One of the employees had scarlet fever (unknown to him at first), and actually went about delivering milk while the rash was out upon him. Strong suspicion that the disease originated from the cattle.	Dr. Shirley F. Murphy. The Lancet, 1894, Vol. II, pp. 449, 910.
71	April, 1894	Patrick					This limited epidemic was traced to a milk farm in Dumfriesshire which supplied Patrick with the milk, and several cases of scarlet fever had occurred there.	Lancet, London, Vol. I, 1894, p. 1101.
72	October, 1894	Shirley, Warren, Southampton.	9		9	100	These cases were traced to a dairy where there had been an unrecognized case of scarlet fever. In a cottage, under the same roof as the milk, was found a case in the "desquamative" stage.	Dr. George H. Weston. Brit. Med. Jour., 1894, Vol. II, pp. 956-1408.
73	February, 1895	Hornsey sanitary district.	233				Certain of the farms from which the dairy in Hornsey drew its milk supply were either in or close to a village in which scarlet fever had been prevalent, though in a very mild form, since the summer of last year, so that the school at Hatton, the village in question, was closed, and it was found that at one of the milk farms the	Brit. Med. Jour., Vol. I, 1895, p. 550.

74 April, 1895..... Hornsey..... Brit. Med. Jour., Vol. I, 1895, p. 772.

milk was actually under the same roof with a case of scarlet fever which occurred there January 8. As has been observed in previous epidemics of scarlet fever, dissemination by milk, the type of the disease appears to have been mild, as the death from the disease has been reported.

The outbreak of scarlet fever in North London just referred to has been followed by a smaller one, which, from the remarks of the chairman of the Hornsey district council, appears to have been traced to one dairy. It was stated that the milk was distributed by two men, and that at the houses at which one of these men delivered milk there were no cases at all, while at those at which the second man delivered there were 15 or 16 cases of scarlet fever. At this man's house a child had suffered from scarlet fever, showing clearly the manner of infection as having taken place by infected clothing, and the germs were most likely conveyed into the milk while this man pushed his arm into the big can to fill the little ones during his rounds.

TABLE III.—*Epidemics of milk—Diphtheria (Harts).*

1 June, 1877	Sutton, Surrey.....	15 .....	.....	.....	.....	Dr. E. L. Jacob, M. O. H. Brit. Med. Jour., Vol. II, 1879, p. 740.
2 ^d May, 1878	North London (Kilburn and St. Johns Wood, etc.).....	264	38 .....	.....	.....	Dr. W. H. Power. Brit. Med. Jour., Vol. I, 1879, pp. 48-58; Trans Pathol. Society for London, 1879.
3 July, 1878	Weybridge, Surrey.....	60	2	60	100	Dr. E. L. Jacob, M. O. H. Brit. Med. Jour., Vol. II, 1879, p. 739.

No sickness at farm among men or beasts. The outbreak affected within 3 days 15 persons in 11 households, in good sanitary surroundings, and all supplied from 1 dairy.

No diphtheria or sore throat at milk farm, but Mr. Power subsequently raised the question whether garget in cows might not induce such changes in the milk as to give diphtheria to the human subject.

Cases occurred simultaneously at milk farm and customers. Well water of dairy contaminated with sewage matter. Unsanitary drains in the yard where milk cans were cleansed, and in the floor of the dairy was a gully leading to an unventilated drain.

TABLE III.—*Epidemics of milk—Diphtheria (Harris)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
4	August and September, 1878.	Leatherhead	55	5	.....	.....	No cases of diphtheria at milk farm or dairy; no sickness among the cows. The water used at dairy had at times smelled badly, and the pipe from the sink where milk cans were cleaned was not properly trapped.	Dr. E. L. Jacob, M. O. H. Brit. Med. Jour., Vol. II, 1879, p. 740.
5*	October, 1878.....	Addlestone, Surrey...	48	.....	.....	.....	No diphtheria at farm. Water supply very impure, and one of the cows had lately suffered with garget.	Dr. E. L. Jacob, M. O. H. Brit. Med. Jour., Vol. II, 1879, p. 239.
6	September, 1879.....	Little Horton, Bradford	7	1	7	100	A child had been ill with sore throat at farm about August 18, and another found with unmistakable diphtheria taken sick August 31; unsanitary conditions, dirty milk cans, washed over a sink, beneath which was found a chamber containing excreta; washtub near milk supply. Traced to a particular milk supply where no cases of diphtheria existed at farm; in fact, no evidence of infection by human agency.	Dr. H. Batterfield, M. O. H. Brit. Med. Jour., Vol. I, 1880, p. 953.
7	December, 1880.....	Surbiton.....	42	8	.....	.....	.....	Dr. O. Coleman, M. O. H. Brit. Med. Jour., Vol. I, 1881, p. 140.

<i>Epidemics of milk—Diphtheria (Eusey and Kober).</i>								
8	December 21-30, 1882.....	Devonport.....	31	5	27	93	Most of the persons attacked were liable to sore throats and many were adults (20 cases). Origin obscure; no evidence of diphtheria at dairy, but the surroundings were very unsanitary, and according to Dr. Parsons the infectious matter may have gained access to the milk by wiping out the cans with cloths which had been hung up in the narrow and close back yard and attracted impurities from the atmosphere.	Dr. Parsons. Report Medical Officer local government board, 1883, pp. 49-53.
9	January, 1883.....	Hendon Ward, Hendon urban sanitary district.	62	5	.....	.....	This epidemic was traced to a milk supply derived from a dairy where the utensils were washed in a brook contaminated by sewage, and the milk was quite rosy and stringy. Evidence of previous cases in the vicinity. No apparent disease among the cows.	Dr. W. H. Power. Report Medical Officer local government board, 1883, pp. 42-48.

10	1883	Cardiff	17	5	17	100	<p>This epidemic was traced to milk derived from a farm where diphtheria had prevailed. The well was liable to sewage contamination, and dairy utensils were washed in this water.</p> <p>Out of 400 families supplied with the suspected milk the disease appeared in only nine. Diphtheria had prevailed in the district. No evidence of diphtheria at the farm (doubtful).</p> <p>Epidemic traced to milk derived from a farm where diphtheria was known to exist.</p> <p>Of these 27 cases 24 were supplied with milk coming direct from families in which the disease was known to exist. Of the 14 deaths 13 were in families using the milk known to be infected, and one in the family in which no history is had.</p> <p>All these cases were taken sick within one week; all had a local throat affection with white patches on tonsils and enlarged cervical glands; no fatal cases; many of the attacks were mild, some were more severe and lasted a fortnight—those were pronounced diphtheria—the others were of a diphtheritic type. The milkman and family were suffering about the same time from sore throat; also the pet lamb. Cows apparently healthy, although four calves had recently suffered from diphtheria.</p> <p>The outbreak affected especially, well-to-do families, who bought larger quantities of milk and stored for use. The result of the investigation at the milk farm proved negative; one of the milk carriers had scarlet fever in July, another developed the disease after the main outbreak; no disease among cows, except slight sign of "claps" on their teats.</p> <p>Traced to a common milk supply where polluted water had been used to dilute the milk.</p> <p>Outbreak sudden and affecting within one week customers of a particular dairy. Before and after this outbreak numerous cases of sore throat had been observed in families supplied from the same dairy, no evidence of disease among man or animals at the farm to account for the infection of the milk.</p>
11	April, 1883	Putney	17	5	17	100	
12	June, 1886	Melrose, Mass	23		14		
		Malden, Mass.	27				
13	July 11-18, 1886	Canterbury	231				
14	October, 1886	Camberly and Yorktown.	135	16	124	92	
15	October and November, 1886	Military college near Camberly	88	18			
16	January, 1887	Ealing	30	12	28	93	

Dr. Paine. Brit. Med. Jour., 1883, Vol. I, p. 973.

Dr. Walker and Blaxall. Sanitary Record, 1882-83, pp. 513-560.

Dr. Jul S. Clark. Boston Med. and Surg. Jour., vol. 117, 1887, p. 100.

Dr. Wachter. Brit. Med. Jour., 1886, Vol. II, p. 397.

Dr. W. H. Power. Report Medical Officer local government board, 1886, pp. 311-326.

Dr. Alf. T. C. Clark, brigade surgeon. Army med. dept. Reports, London, 1887, XXVI, pp. 433-441.

Dr. W. H. Power. Report Medical Officer. local government board, 1887, pp. 93-101.

TABLE III.—*Epidemics of milk—Diphtheria (Busey and Kober)*—Continued.

No.	Date.	Place.	Number of cases.	Number of deaths.	Number of cases among milk consumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
17	November 30 to December 24, 1887.	Enfield	213	48	179	84	This epidemic affected families residing in the best part of Enfield as well as persons living in less favorable localities, and seized persons supplied with a particular milk, however wide apart their residence. No evidence of diphtheria at dairy, but report refers to the unusual number of dead cats found in December and January in the vicinity. This epidemic was supposed to have originated in the milk of a diseased cow which had been used by the inmates of the station.	Dr. Bruce Low. <i>London Lancet</i> , 1888, Vol. I, p. 1151.
18*	January, 1888.....	Oakleigh police station.	.....	.....	.....	.....	The water supply of the farms which supplied milk to the homes was found to be impure. One of the cows had "garget," and the epidemic began to decline rapidly eight days after the stoppage of the milk supply.	Dr. B. B. Loughhead. Report board of health, Ohio, 1886-87, Columbus, 1888, II, p. 362.
19*	January, 1888.....	Princess Mary's village homes.	48	.....	.....	.....	Dr. Robinson details several local outbreaks connected with the milk supply. At one farmhouse the disease was concurrent with a disease among the farm stock, and on the occasion of a previous outbreak at the same house the cattle were also concurrently affected. In another instance the first case was in a boy who had been feeding a dog with the carcass of a diseased cow. In the last sudden and explosive outbreak the disease was confined to consumers of milk derived from a farm where three cows had been sick.	Dr. Robinson. <i>Brit. Med. Jour.</i> , 1889, Vol. I, p. 1247.
20*	1889	East Kent.....	.....	.....	.....	.....	These cases occurred in 58 families; consumers of milk from a certain farm; severe cases occurred among the largest milk drinkers. Mode of infection obscure, but believed to be due to a diseased cow among the dairy stock. The epidemic ceased upon stoppage of the milk. Upon resuming to milk a suspected cow, new cases of scarlet fever and throat affections developed.	Dr. Parsons. Report of Medical Officer local government board, 1889, pp. 89-114.
21*	January and February, 1889.	Macesfield and Upton.	85	.....	.....	.....

22 ^a	June, 1889	Enelkes farm, Holbach medical district.	73	8	3	Traced to a dairy; infection probably contracted in the milk sold June 9 and 10; milk farm in a most insidious condition and disease among milch cows. This epidemic was traced to a milk farm, where one of the dairy maids suffered from a sore throat of an erysipelatous character. The epidemic manifested itself chiefly in the form of severe sore throat, but in a number of cases a typical erysipelas developed. This conjunction of sore throat and erysipelas is interesting; and it may almost be said, from the acute character of the inflammation of the throat and its suppurative nature in some cases, that it also had many of the features of erysipelas. "In all, the tonsils and fauces were intensely congested, one having a distinct erysipelatous appearance. In several, the pharynx was also involved in the congestion. In two of those who drank freely of the milk and continued its use longest, there was membranous exudation in the shape of patches on the lips and tongue, but none on the tonsils and pharynx. Submaxillary glands were invariably enlarged; temperature was high during the first few days. Prostration was a marked feature." Milk supplied by two dairies; Dr. Klein found at one of the farms ulcers in the teats of certain milch cows; supply from this farm stopped November 3, and only a few more cases occurred afterwards. Dr. Carpenter thinks that the milk was contaminated during distribution, not at its source in the cow's udder.
23 ^b	March, April, 1890	Glasgow	80	3	3	This house epidemic affected residents of the dairy farm—all consumers of unboiled milk derived from cows suffering from a "febrile and eruptive epizootic."
24 ^a	October and November, 1890.	Croydon	100	100	100	Epidemic among customers of a particular milk farm, located in an infected district; the disease was promptly checked upon stoppages of the milk supply.
25 ^a	November, 1891	Worcestershire	6	6	100	These cases occurred within one week, and were all traced to a milk supply derived from a farm where a German boy assisted in milking while he had diphtheria.
26	December, 1891	Surbiton, urban sanitary district.	27	3	27	
27 ^a	July, 1893	Hightstown, N. J.	28	11	28	

Dr. H. Moller and N. Elmdt. Ugeskrift for Læger, Kjöbenhavn, 21, 4 R., 1890, XXI, pp. 405-410.

Dr. Wm. Hunter. Glasgow Med. Jour., 1890, XXXIV, pp. 241-258.

Dr. Carpenter. Sanitary Record, London, 1890-91, XII, p. 274.
Dr. Philpot. Brit. Med. Jour., 1891, Vol. I, p. 476.

Dr. W. N. Thursfield. Public Health, London, 1891-92, IV, pp. 130-134.

Dr. Coleman, M. O. H. Public Health, 1891-92, Vol. IV, p. 159.

Dr. T. B. Appleget. Medical News, 1893, vol. 63, p. 238.

TABLE III.—*Epidemics of milk—Diphtheria (Busey and Kober)*—Continued.

No.	Date.	Place.	Num- ber of cases.	Num- ber of deaths.	Number of cases among milk con- sumers.	Per cent.	Circumstances of outbreak.	Reporter and reference.
28 ²	December, 1894.....	Ashtabula, Ohio	111	23	100	90	Traced to a particular dairy where one of the drivers of the milk wagons was suffering from sore throat as early as December 2, and perhaps a few days earlier. The first case among the infected families occurred December 4. Of the 111 cases and 23 deaths, 100, with 21 deaths, were in families that used this particular milk. Sale of milk prohibited December 11. Evidence pointing to infected milk is entirely circumstantial, since after repeated examinations the bacillus of diphtheria was at no time found in cultures from the milk or from the throat of the driver.	Report of Ohio State Board of Health, 1894, p. 298. Dr. Hopkins and Dr. Wm. T. Miller. The Western Reserve Medical Journal, April, 1895.

1. 1. 2. 3. 4. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 13. 14. 15. 16.
 80° 30' 10' 110' 80' 116' 40' 100' 85' 100' 85' 85' 111.5 85' 110' 70' 110' 110' 160'
 NORTH & SOUTH CAP'L 150' EAST CAP'L 160' BOUND

Avenues

| | | | |
|----------------------------|------|---------------------------------|---|
| CONNECTICUT | 150' | NEW JERSEY | 2 |
| DELAWARE | 160' | NORTH CAROLINA | |
| GEORGIA | 160' | NEW HAMPSHIRE | |
| INDIANA | 160' | OHIO | |
| KENTUCKY | 120' | PENNSYLVANIA East of 15th | |
| LOUISIANA | 150' | PENNSYLVANIA West of 14th St. | |
| MARYLAND | 160' | RHODE ISLAND | |
| MASSACHUSETTS | 160' | SOUTH CAROLINA | |
| MISSOURI | 80' | TENNESSEE | |
| MAINE | 80' | VERMONT | |
| NEW YORK East of 15th Str. | 130' | VIRGINIA Mall to Eastern Branch | |
| NEW YORK West of 17th | 160' | VIRGINIA B St to Rock Creek | |

N. O. I.

MAP

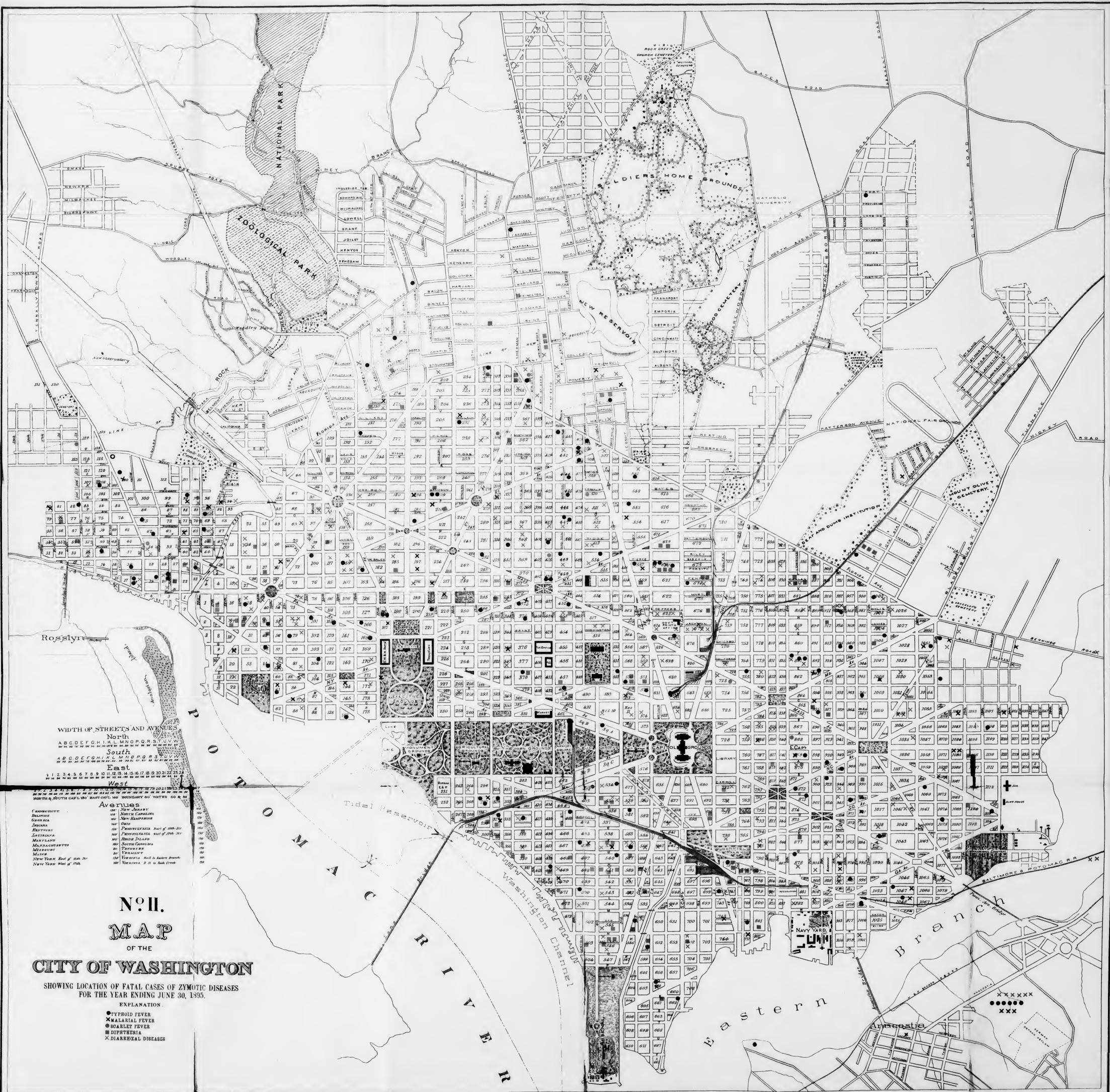
OF THE

CITY OF WASHINGTON

LOCATION OF DEATHS FOR THE YEAR ENDING

EXPLANATION:

COMBINED NUMBERS SHOW TOTAL DEATHS ON EACH AVENUE
 DEATHS OF WHITE PERSONS ARE INDICATED BY NUMBERS IN
 THOSE OF COLORED PERSONS BY NUMBERS IN



Nº II.

MAP

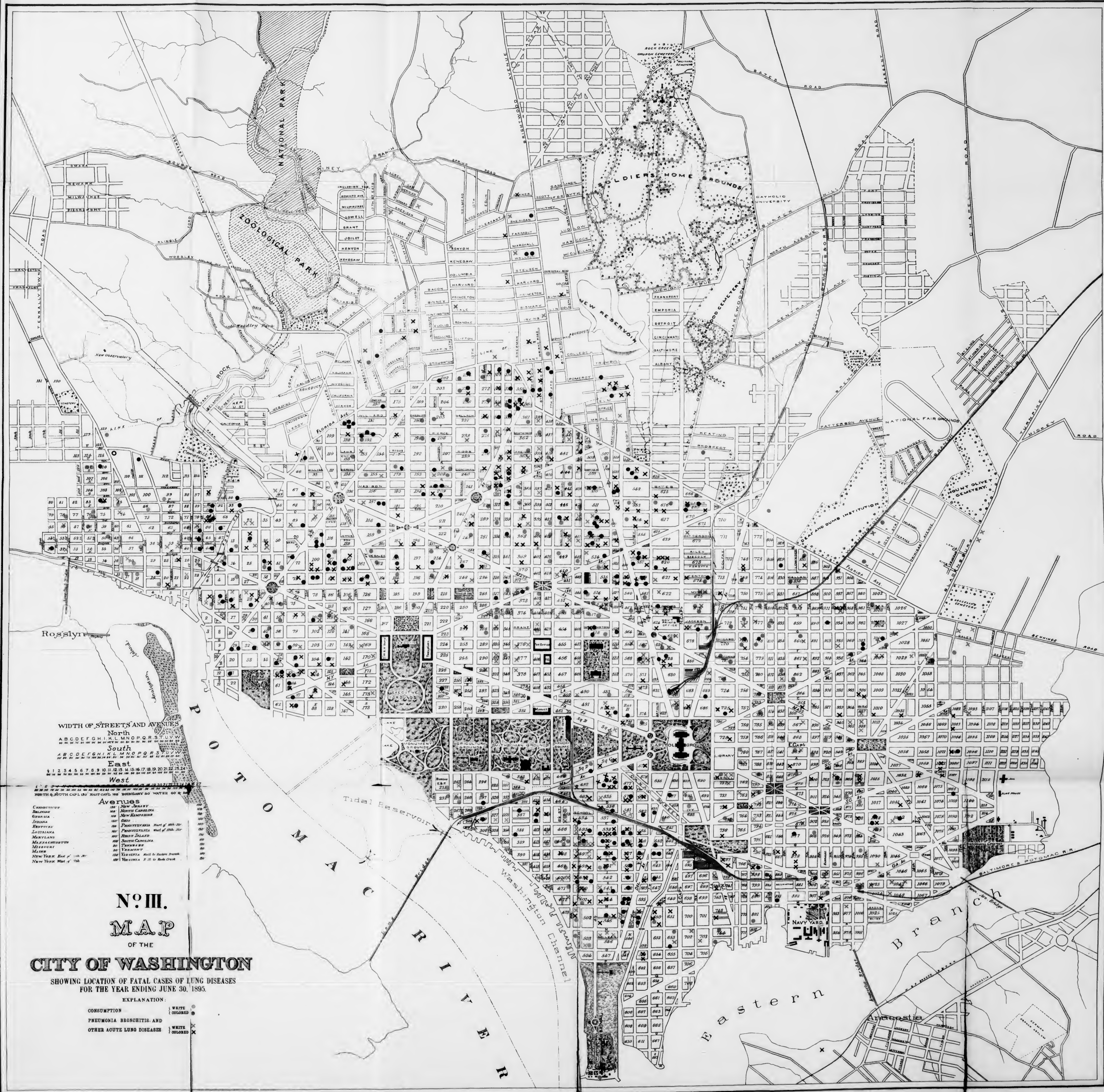
OF THE

CITY OF WASHINGTON

SHOWING LOCATION OF FATAL CASES OF ZYMOTIC DISEASES
FOR THE YEAR ENDING JUNE 30, 1935.

EXPLANATION.

- TYPHOID FEVER
- ⊗ MALARIAL FEVER
- ⊙ SCARLET FEVER
- ⊗ DIPHTHERIA
- ⊗ DIARRHEAL DISEASES



WIDTH OF STREETS AND AVENUES
North
ABCDEFGHIJKLMNPOQRST
South
ABCDEFGHIJKLMNPOQRST
East
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
West
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

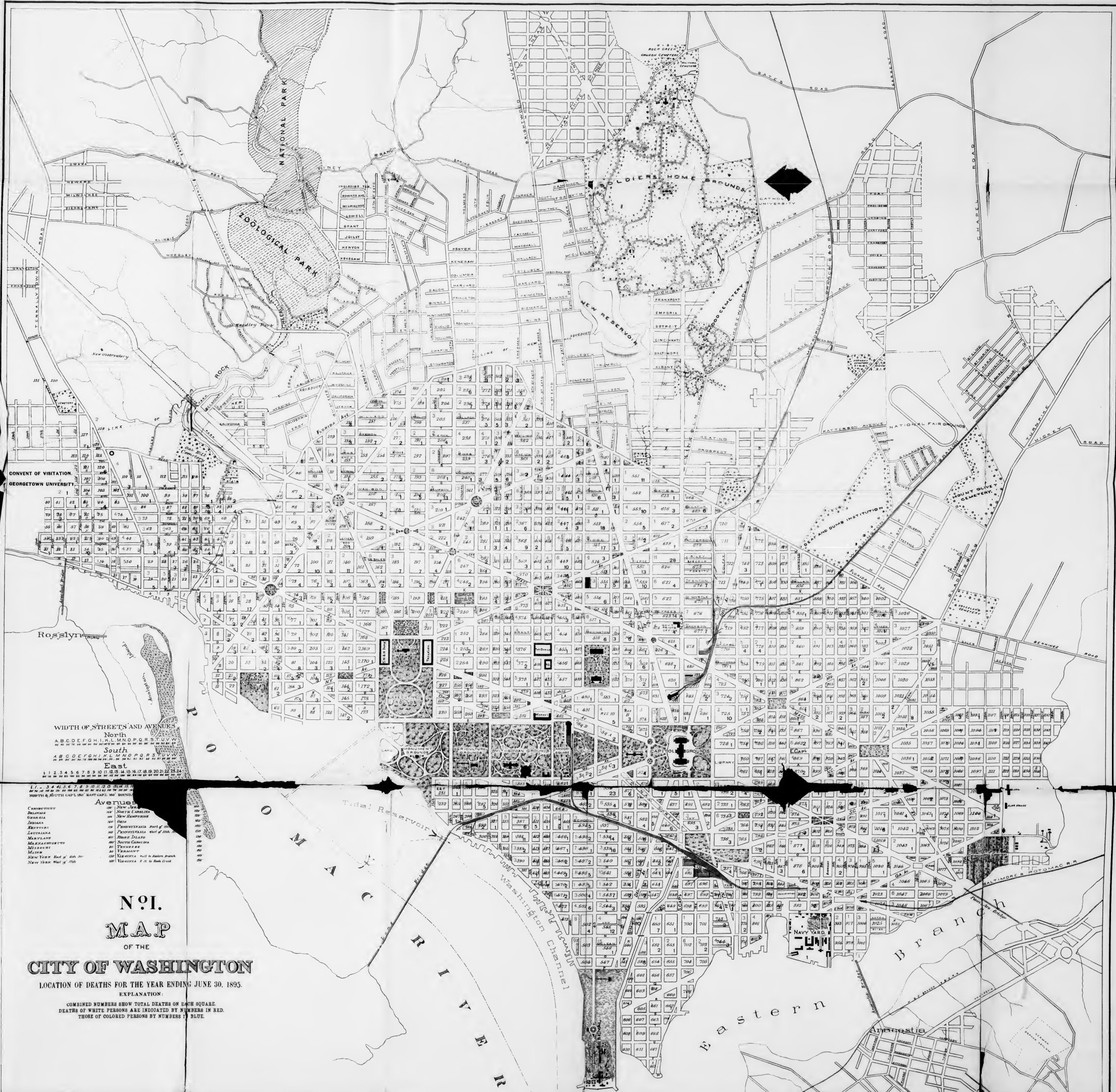
- Avenues
- 1st New Jersey
 - 2nd New Jersey
 - 3rd New Jersey
 - 4th New Jersey
 - 5th New Jersey
 - 6th New Jersey
 - 7th New Jersey
 - 8th New Jersey
 - 9th New Jersey
 - 10th New Jersey
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 - 98th New Jersey
 - 99th New Jersey
 - 100th New Jersey

N^o. III. MAP OF THE CITY OF WASHINGTON

SHOWING LOCATION OF FATAL CASES OF LUNG DISEASES
FOR THE YEAR ENDING JUNE 30, 1895.

- EXPLANATION:
- CONSUMPTION
 - PNEUMONIA BRONCHITIS AND
OTHER ACUTE LUNG DISEASES

- WHITE
- COLORED
- WHITE
- COLORED



WIDTH OF STREETS AND AVENUES

North
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

South
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

East
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Avenues
1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th 13th 14th 15th 16th 17th 18th 19th 20th 21st 22nd 23rd 24th 25th 26th 27th 28th 29th 30th 31st 32nd 33rd 34th 35th 36th 37th 38th 39th 40th 41st 42nd 43rd 44th 45th 46th 47th 48th 49th 50th 51st 52nd 53rd 54th 55th 56th 57th 58th 59th 60th 61st 62nd 63rd 64th 65th 66th 67th 68th 69th 70th 71st 72nd 73rd 74th 75th 76th 77th 78th 79th 80th 81st 82nd 83rd 84th 85th 86th 87th 88th 89th 90th 91st 92nd 93rd 94th 95th 96th 97th 98th 99th 100th

N. 1. MAP OF THE CITY OF WASHINGTON

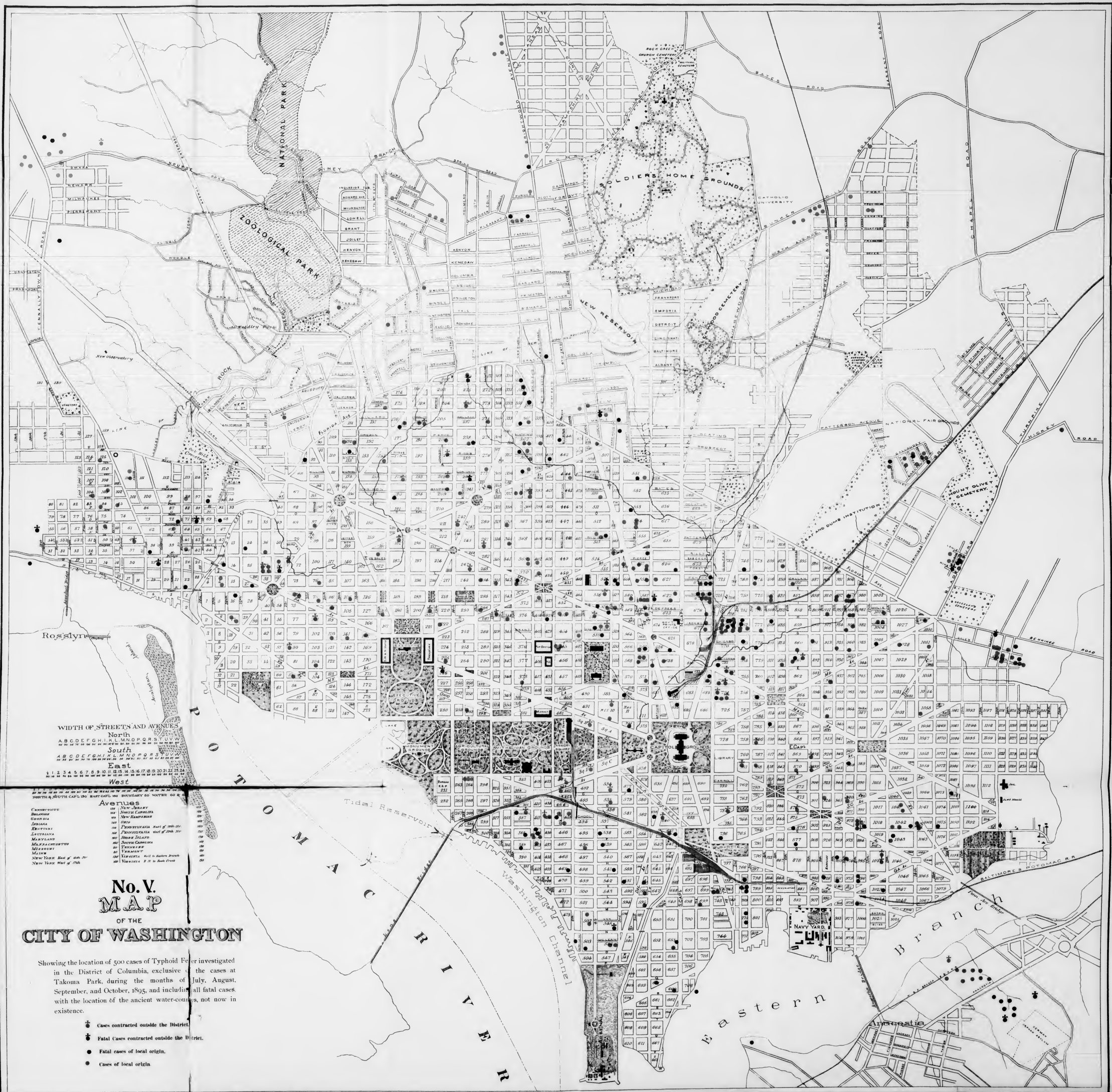
LOCATION OF DEATHS FOR THE YEAR ENDING JUNE 30, 1895.

EXPLANATION:

COMBINED NUMBERS SHOW TOTAL DEATHS ON EACH SQUARE.

DEATHS OF WHITE PERSONS ARE INDICATED BY NUMBERS IN RED.

THOSE OF COLORED PERSONS BY NUMBERS IN BLUE.

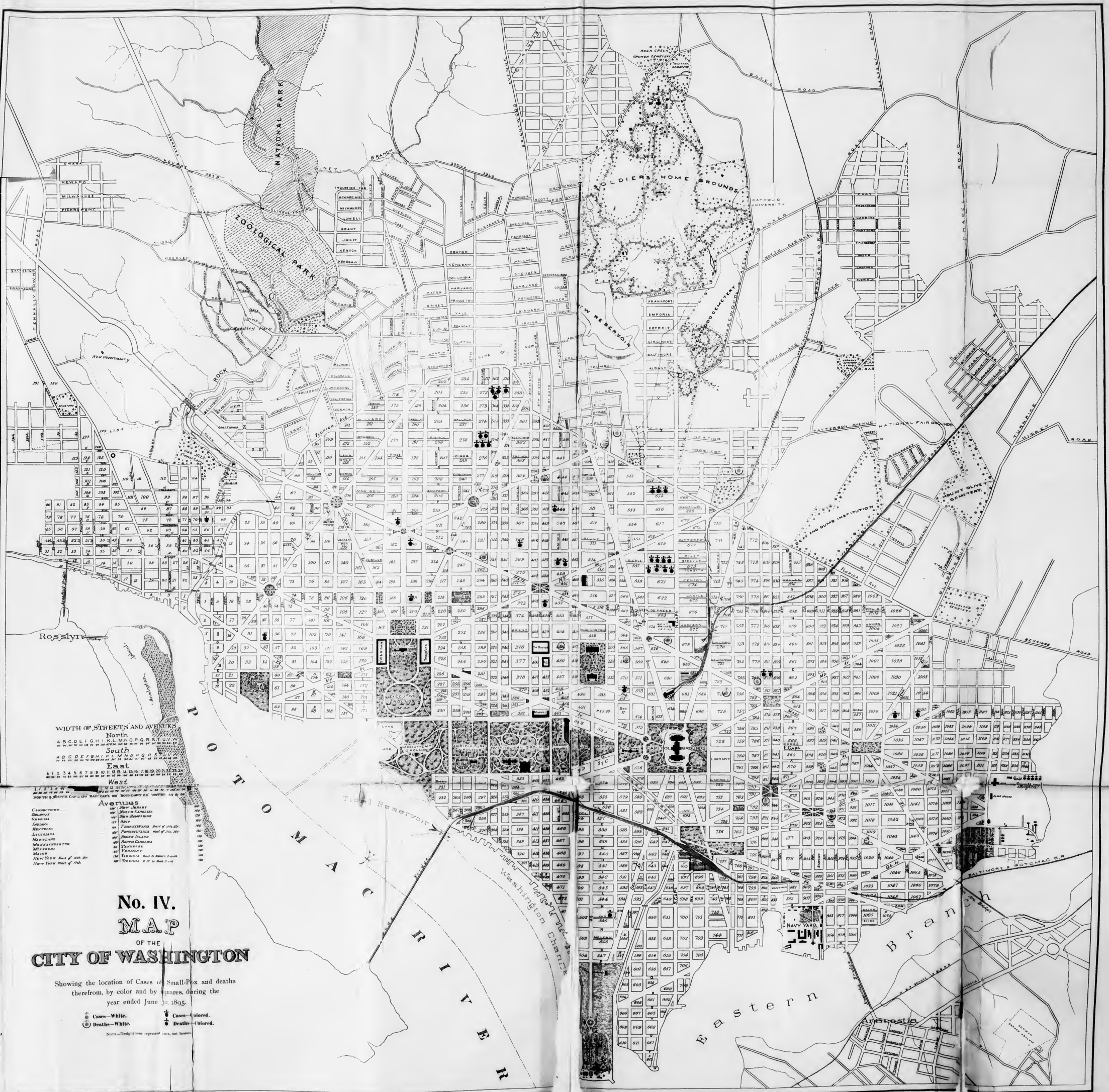


WIDTH OF STREETS AND AVENUES
North
ABCDEFGHIJKLMN O P Q R S T U V W
South
ABCDEFGHIJKLMN O P Q R S T U V W
East
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
West

No. V. M.A.P. OF THE CITY OF WASHINGTON

Showing the location of 500 cases of Typhoid Fever investigated in the District of Columbia, exclusive of the cases at Takoma Park, during the months of July, August, September, and October, 1895, and including all fatal cases, with the location of the ancient water-courses, not now in existence.

- ✕ Cases contracted outside the District.
- Fatal Cases contracted outside the District.
- Fatal cases of local origin.
- Cases of local origin.



WIDTH OF STREETS AND AVENUES
North
ABCDEFGHIJKLMNOPS
South
ABCDEFGHIJKLMNOPS
East
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
West
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Avenues
New Jersey
New York
New Hampshire
Ohio
Pennsylvania
Maryland
Virginia
New York East of 10th St
New York West of 10th St

No. IV.
MAP
OF THE
CITY OF WASHINGTON

Showing the location of Cases of Small-Pox and deaths therefrom, by color and by squares, during the year ended June 30, 1895.

• Cases—White. • Cases—Colored.
• Deaths—White. • Deaths—Colored.

Note.—Designations represent cases, not houses.

1877

1878

1879

1880

1881

1882

1883

1884

1885

1886

1887

1888

1889

1890

1891

1892

1893

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- and character of street pavements, July 1, 1895.....
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- and permit work, expenditures on roads and suburban streets
- system, sewer work done under
- and collection of water-main taxes, July 1, 1878, to June 30, 1895.....
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- block and tile, proposals for furnishing.....
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 - Eleventh street NE., between Maryland and Florida avenues, for improvement of
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 - First street NW. extended, for grading
 - Fifteenth street NE., between East Capitol and E streets, for improvement of
 - Florida avenue, from New York avenue to Brentwood road, for improvement of
 - Fire and street hydrants, for furnishing
 - High street, between M and N streets, for laying and relaying granite blocks
 - Hauling granite blocks, bricks, and curbing
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 - vitrified blocks
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 - Paving alleys.....
 - Pennsylvania avenue extended, for improvement of
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 - Sewer pipe and invert blocks, for furnishing.....

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Illuminating power and purity of.....

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